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Volume 5, Number 3
March, 1990

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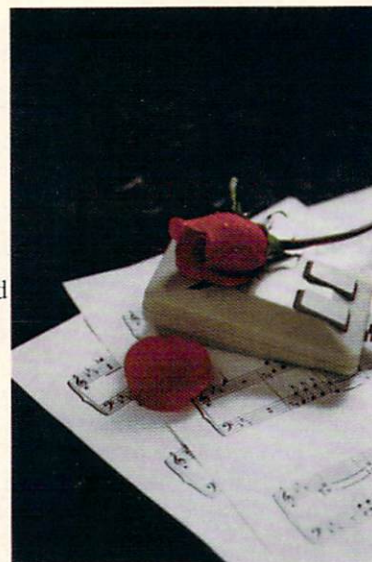
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When Music and Sound Take Center Stage.

This issue of AC features many of the different avenues available to the Amiga musician. Although we have loaded this issue with Amiga music examples, we complete it knowing we have not been able to cover every possible combination. The Amiga's sound capabilities are a good reason this computer excels as a multimedia platform.

Sound is literally the voice of the Amiga. Through software it is possible to craft a sound as completely as crafting a graphic image. By modifications of sound waves and selections of diverse digitized sources, Amiga artists can create the exact sound they want. The only drawback encountered would be the same hazard experienced by the graphic artist—output.

In order for an image to carry the maximum impact available, the graphic artist must bow to the best output device available. This is true whether it be a screen display, a video recording, or a print-out. Without the proper output device, the artist's work remains trapped in the electronic circuitry of the artist's Amiga.

Sound has similar restrictions. It is easy to hear the sound you are creating through the speakers of your Amiga, yet attach the Amiga to a stereo system and the sound is so much richer in tone and quality. Amiga sound artists (musicians and others) resort to better and better hardware systems in order to create the sound quality they need. This may be as simple as buying better speakers or a better stereo, to equipping your Amiga with the latest and biggest MIDI keyboard.

Additional sound capabilities of the Amiga are available through software. Besides the multitude of good Amiga sound manipulation programs that are available, there are also libraries of sound samples. These digitized samples provide the sound industry with the same advantage that clip art provides to the publishing industry—raw material. These small pieces permit the artist a library of options to create the exact feel and quality for the finished piece.

Why is sound so important? I started by describing sound as the voice of the Amiga. When we use this voice effectively, we take advantage of some of the major opportunities the Amiga presents. Unfortunately, most commercial programs not intended for the music trade or the entertainment market completely neglect the opportunity that sound provides.

Except for most entertainment software, sound is forgotten. Those special abilities that sound makes available to the Amiga game player should also enthrall the Amiga business user. "What?" you ask, "Why would a business user want sound on his program? Doesn't the Amiga have enough problems establishing itself in the business market? Why should the Amiga be burdened with the extra weight of a sound

Sound is literally the voice of the Amiga. Through software it is possible to craft a sound as completely as crafting a graphic image.

library that would neither speed the business process nor appear distinguished (IBM like)?"

Although that is a valid point, I believe there are good uses for sound in all programs including business. I do not believe the business user needs to hear gun fire and a grunted "You got me!" when a record in a database is deleted. Yet, the creative use of tones and audio cues to the user could produce more productive software. As in any carefully crafted game, the user should always have the option of selecting the sound to "OFF."

Imagine different tones for different warning messages. Imagine an audio warning cue when you have entered data for some time without saving. Think of a note which rises or drops in relation to the amount of movement made in scrolling

through a document. These audio alerts would make it easier and quicker to move through your documents and activities without being totally reliant on the Amiga screen.

Audio, long overlooked in other computer formats, cannot be overlooked in the Amiga. The Amiga has always shined because of its ability to handle both sound and graphics better than any other computer platform. Due to its audio features, the Amiga has led in the development of multimedia computer applications. The Amiga provided both stereo output and a built-in speech synthesizer as an integral part of its original system. This is where the Amiga started, yet there is so much more that can be accomplished.

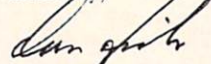
The Future of Amiga Sound

Advanced sound applications can extend the reach of this computer. Artificial Intelligence packages can utilize sound to direct, instruct, and inform. Software packages can be extended by audio output to assist the handicapped Amiga user.

With a system like the Amiga, everyone benefits when it is used more effectively. Software becomes more exciting, applications become easier to use, and the capabilities of the Amiga become more noticeable. The lines between the Amiga and other equipment become more firmly drawn when the abilities of each are more pronounced.

I hope the questions I have raised will entice Amiga developers to utilize sound more often and more completely. For some people, these points may appear trivial. However, it seems a shame to have all of the Amiga's capabilities and not take advantage of every one.

Sincerely,



Don Hicks
Managing Editor

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Feedback

Dear AC:

Thank you for the continuing hardware and software "how to" articles. They are invaluable to adventurous Amigaphiles. The AmigaBASIC requester article by John Wiederhim in the October issue was very educational. However, I did run into a problem with the "CopyMem&" call. If this is a system call my machine did not want to recognize it. I got around this with the following routine:

```
FOR X=0& TO t1&
POKE tp&+X, PEEK(SADD(t$)+X)
NEXT X
```

This places the defined text into the requester. It may be of use to others who had trouble with this part of the code.

Regards,
Frank Turner
Santa Cruz, CA

Thanks for sharing the tip, Frank. ED

Dear AC:

First, I would like to tell you that this is the first time I have read your magazine. Your articles are very interesting and informative. Also, I am new to the Amiga computer. I just bought an Amiga 2000 with a single drive, I had a Commodore 64 before and now use an AT-compatible at work, so I am more familiar with MS-DOS than anything else.

I want to install a hard drive in my Amiga. I have read your article about the HDA-506 in V4.11 and remain confused. I know from experience, that if you have the right controller in your IBM-PC, that you can buy a hard drive or card and practically "plug it in". I have noticed that the same model of hard drives advertised in the Amiga magazines are more than they are

for the PC's in their magazines. After reading your article, I am still not sure of what I need to buy to install a hard drive or card in my Amiga. Do I need to buy the PC hard drive with its controller and the HDA-506 or can I just buy a PC hard drive and use the HDA-506?

Can you explain the difference between a SCSI, RLL and MFM type drives which one is the best for the Amiga?

Can an IBM compatible modem be installed in the Amiga 2000? Again, they are cheaper than the modems advertised in the Amiga magazines.

Finally, can you tell me what the DOS to DOS and CrossDOS programs advertised do? Can I run and use MS-DOS word processors and spreadsheets on my Amiga, if I use these programs? They are the only two MS-DOS programs I am interested in using on my Amiga at the present, because I could then do some of my office work at home. I know I could write to the individual companies, but I thought you might have an answer. I realize this is a lot to ask, but I must start somewhere. These questions have probably been answered in the past, but as I said before, I am new with the Amiga and anxious to learn. I keep getting confusing answers to these same questions from other Amiga owners in my area. Some say the these programs work alone, and some say I need the bridgeboard setup.

Thank you
Meek C. Kiker
Orange Park, FL

It's always nice to hear from a new Amiga owner. Let's try the easiest questions first. DOS to DOS and CrossDOS are programs to convert MS-DOS files to AmigaDOS format and vice versa. In addition, CrossDOS allows you to access

MS-DOS files from Amiga programs and also can allow you (from the CLI) to perform most AmigaDOS functions on an MS-DOS disk. (For more info on these programs please do write or call the companies.) Neither one of these will allow you to run MS-DOS applications (programs) on an Amiga. In order to do this you do need a bridgeboard. The bridgeboards actually put a PC (or AT) inside your Amiga and will allow you to run most MS-DOS software.

Next, the modem. My technical advisor informs me that all modems are basically the same, but if you're asking about using an internal IBM-type modem then the answer is the same as above. With a bridgeboard you could use an IBM-type modem card in one of the IBM slots on the 2000. Otherwise you will need either an internal Amiga modem or an external modem. If you choose an external modem, you will need to know the proper connections. An Amiga modem's instructions will, obviously, tell you how to hook up to an Amiga, while a more generic model may, at this point, just confuse you.

As for the hard drive question, just about any hard drive on the market can be used with the Amiga, if you have the proper controller. Spirit's HDA-506 is special in its ability to interface with an ST-type hard card and controller. But there are many Amiga controllers on the market which will allow you to use an ST-type drive, including the Commodore A2090A and new A2091A which also allow autobooting. In general your choices are: an Amiga-ST-type interface and ST-type drive (cheaper, usually slower, generally non-autobooting) or an Amiga SCSI-drive controller and a SCSI drive (faster, more expensive, generally autobooting). We don't really have the space here to go into a serious comparative discussion of the different types of hard drives, and we
(continued)

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wouldn't be able to recommend one without knowing your particular needs, but check with your dealer about the differences, and rest assured that Amiga controllers exist for virtually every kind of drive available. It seems unfortunate but inevitable that, with such a special machine as the Amiga, some peripherals may cost a little more than those for a run-of-the-mill PC or Mac, but these prices have come down somewhat and, as the Amiga's popularity continues to rise these higher prices should continue their decline.

Dear AC:

A letter from R.P. Haviland (in AC Vol. 4, No. 12) raised some interesting questions about the Amiga's video output and hi-res screen flicker. He also drew some conclusions to which I must respond.

I was troubled to read that "there is a bug in the [Amiga's] hi-res screen generation". R.P. had adjusted the vertical hold on his 1080 monitor so that he could examine the extreme upper and lower scan lines off the video image as the picture rolled. He noticed that the very top scan line was a "short fractional line", and noticed a "missing part of the last visible line" (not normally visible) as well. R.P. says "there is definitely something wrong" when the short lines appear, and that there is a "position problem evident in the Amiga". Here I must defend my machine.

The short lines show us that the Amiga is generating a proper NTSC signal. I suggest that R.P. try playing with the vertical hold on an ordinary TV set, or even a monitor playing a digital video disc. With proper contrast, he will see the same short lines at the top and bottom of the image.

This is because each frame in NTSC video is made of two fields. The fields are "interlaced" together: one field contains all the odd numbered scan lines, the other contains the even numbered lines. To make one frame (525 scan lines high), the two fields each consist of 262 and one-half scan lines (half of 525). One half line is put at the top of the first field, and the other half is left at the end of the second field. These are not visible parts of the display but the extreme edge of the overscan area.

But R.P.'s main complaint is the screen flicker that appears on certain interlaced screen displays. Amiga "interlace" mode is the same interlacing I mentioned above: two fields are "interlaced" to make each frame. In a frame from an ordinary TV show, the two fields will look almost identical. The slight differences between the fields refine the detail of the image, doubling the resolution.

Fields are put on the screen simultaneously, but almost 1/60th of a second apart. To hold a "still" interlaced image on the screen, the monitor rapidly alternates between the two fields that make it up. This alternation will become a visible flicker if the two fields are not very similar. Remember that any two adjacent scan lines in interlaced mode must be part of two different fields, and flicker on and off as it is displayed. This is true for edges of text, windows, and icons on the interlaced screen, and it can be very annoying.

Flicker is avoided in non-interlace mode, because the Amiga sends out two identical fields to make each frame. The alternation between fields is not visible: you see one steady image. If you are generating interlaced graphic screens with several bitplanes, use your extra colors to anti-alias (soften the edges of your image). This makes your Amiga's output more similar to a frame from an ordinary TV show. The slight changes between scan lines double your resolution. With no sudden changes between scan lines, there will be no flicker. If you encounter flicker in a word processor or spreadsheet, adjusting your palette to reduce character/background contrast can sometimes help. I have not used any hardware to reduce flicker.

R.P. suggests writing code to flip rapidly between two different screens of graphics. He observed a difference between the displays flipping at 60 Hz (60 times a second) and at 56 Hz. This worries R.P., who fears a timing problem caused by "interrupts". NTSC video (and Amiga

graphics) are updated at 59.94 Hz. By switching to a different screen buffer for every field, there could be little or no continuity between fields, and the screen flickers. Setting the software alternation out of phase from the video field-rate will make you miss many of the swaps, and the effect will appear differently. The video field-rate can be identified by finding the page-flipping rate that produces a steady flicker. The steady flicker at 60 Hz (very close to the 59.94 refresh rate) shows us that the video timing is working properly.

Finally, R.P. seems concerned that "the interrupts that occur in the vertical blanking interval" may somehow upset the timing on the video chip. The "vertical blanking interval" is the brief moment when the electron beam from a TV or monitor tube has projected all of the scan lines in a field, and is turned off as it is directed back up to the top of the screen. (Restoring the beam to both chrominance and luminance after a vertical blank is responsible for "the fast flicker of the first two pixels" that R.P. noticed.) The Vertical Blank Interrupts are tasks cued by the video circuits that the display is in vertical blank. Some system tasks are best done during this interval make use of the video chip or update the screen for animation. Animation and color cycling appear smoother if updates are made between fields. The display is not being interrupted, but it is triggering the interrupts.

Remember: interlace flicker and half-lines at the edge of the overscan area are quirks of the NTSC television standards. They were devised before TV was broadcast in this country, and they are not the fault of the Amiga's video circuits. The Amiga follows the NTSC standards to be compatible with VCR's, digitizers, and inexpensive monitors. The Apple Macintosh II is an example of a machine with graphics not inherently similar to NTSC video: there is no interlace flicker on the Mac II's screen, but the simplest color genlock costs about \$2000! We must tolerate these few quirks of our Amiga displays, because they make possible all of the Amiga's inexpensive desktop video magic.

Sincerely,
Jeremy Birn
Evanston, IL

Thanks for the answer, Jeremy. We couldn't have said it better ourselves. ED

•AC•

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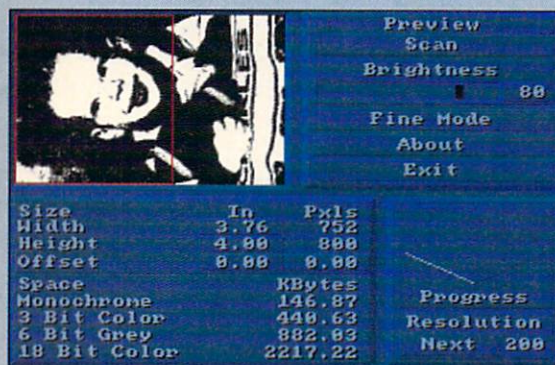


Figure 2.

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Figure 4.



Figure 1.

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Figure 3.

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reviewed by Dr. R. Shamms Mortier

I have a library of over five thousand books, but my favorite is a tiny twenty page paperback that I picked up at a thrift shop for a nickel. My Amiga disk library numbers thousands (and thousands of dollars worth) of disks, but one of my favorites is the program "Performer" by Elan Design. It costs more than a nickel, but it is priced far below many of the other items in my library. Elan Performer is what might be classified as an "animation utility", because it addresses Amiga animations that have been generated in other programs. If you are forced to spend an undo amount of time fine-tuning your Amiga animations in the editing room (and especially if you are paying professional rates for that time), then Elan Performer may literally save you thousands of dollars and many hours of time.

Let's talk a bit about the editing process and the Amiga before we delve into the way that Elan Performer works. The Amiga is a wonderful animation engine, and in the last years, some of the most revolutionary software and hardware has been developed to reach its potential in that area. But now that we no longer are in such desperate need for adequate software/hardware animation support as we once were (though new advances are always appreciated), a new and more expensive problem has risen from the depths: storage

and access. Yes, Virginia, there are a host of hard drives and replaceable media devices available, but they cost one heck of a chunk of dinero. Even when you mortgage one of the kids to be able to afford these devices, you still have to think about the amount of expansion RAM your system has, so that you don't attempt to load a four meg animation into a two meg space. One solution for those with just floppy storage and a modicum of expansion RAM has been to record tiny snippets of an animation to tape, and then to electronically cut and paste the results in the editing room. This is great if you have access to an post-production editing facility

for free, but the nominal cost per hour, should you be forced to pay the price, can be as high as \$120.00 (yes...that's \$120.00 per hour!). Even if it is only \$25.00 an hour, a ten hour session (which is not out of the ordinary) can run you over two-hundred dollars, and the time away from the comforts of home can be frustrating as well. Now it's time to look at Elan Performer in light of the context that we have laid out.

THE SOFTWARE

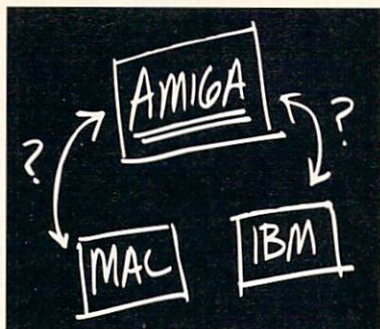
Elan Performer demands some expansion RAM, and the more the merrier. In that way, it's no different then all of the other animation utilities that grace Amigaland. I work with two Amiga systems in my studio, and will tell you how much extra RAM they address so you can put this review in a comparative framework. I have an Amiga 1000 with 4.5 megs total and a 68020/68881 accelerator, and an Amiga 2000 with 5 megs (4 megs of 32 bit wide memory) and a 68030/68882. The A2000 also has the Super Agnus chip for expanded Chip memory. I use both Amigas to create animations for regional television and for instructional use.

When Performer first pops up on the screen, owners of Elan's "Invision" or "Invision Plus" will notice a distinct similarity in the design of the graphic interface. In fact, the main difference between the two programs is that Invision has alternate screens and Performer does not, but the basic feel and mode of operation is the same. Considering the low profile that Elan has given Performer as compared to the media blitz that was lavished upon

Invision, you would think that Performer was a secondary product. It is not. Don't let



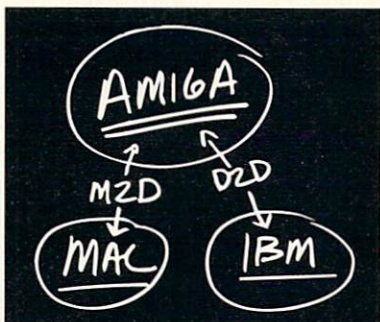
"Owners of Elan's "Invision" or "Invision Plus" will notice a distinct similarity in the design of the graphic interface."



PROBLEM

Your boss wants you to produce an animated video presentation to help sell that new project to top management. You know that a full-color, animated presentation, developed on the Amiga, using its powerful desktop video software, will make a convincing impact.

The Amiga is the right machine for the job, but how can you easily import the images and data you need for your presentation from other divisions of the company, data and images which come from Macintoshes and IBM PCs?



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conversion utilities for PICT files and Mac fonts • Creates icons, as necessary • Formats 400K/800K Mac disks.

DOS-2-DOS uses your Amiga's floppy drives to read/write IBM/Atari 3.5-inch disks • Reads/writes 5.25-inch IBM disks (using an external 5.25-inch Amiga drive) • Converts ASCII text files both ways • Supports international character sets • Formats IBM/Atari disks • Use with IBM program HIJACK (from Inset Systems, not included) to capture/convert IBM graphic images to/from IFF.

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its price (about \$60.00 U.S. retail) fool you. This is one package whose cost can be considered an investment bargain for the Amiga animator.

WHAT IT DOES

Simply put, Performer allows you to grab finished IFF/ILBM animations and still frame pictures, load them into your system, and chain them together for playback in any order. All of the separate files, whether animation sequences, or IFF pictures, are attached to a specific key on the keyboard. Depressing these keys in any order brings up the picture and starts the animation. You can even assign two images to a key by "Shifting" that key. Visuals can also be "Copied" and "Moved" to other keys. If you are recording the results to a videotape at the same time, the final product is an animation with no glitches between cuts. Each of the animations and/or pictures can have its own palette and resolution, and the animations can be toggled to loop. But there's even more.

HOW IT DOES IT

If you try to load more stuff to your system then it has room for, Performer may choke up and erase all of the pieces it has stored. At the start, extensive calls are made to the disk for the files, so a choke-up can result in time spent reinputting the visuals. My solution, for those of you with a good amount of expansion RAM, is to take the time at the outset to load your work to the RAM disk. That way, should an error occur, the time spent by Performer getting the graphics again will be kept to a minimum. Of course, hard disk storage already speeds up the process, but storing animations on a

smaller size hard disk may use up a lot of space. Elan Performer uses the RAM disk for its own purposes, so careful use of that space is recommended. Probably my favorite method of preparing files for use with EP is to put as many of the small sequences on one disk as is possible, especially if the floppy will be your load path (if you don't have enough expansion RAM).

The manual is clear and concise, but it is just too darn small. It is a nice artsy design and all, but I keep losing it amongst the other hundred manuals in my Amiga jungle. It deserves to be larger. It does, however, walk you through the Performer's processes. There are three kinds of control possible with EP, all toggled in the display mode by discreet actions. In "Automatic Sequence", your visuals are displayed in the order in which they are assigned on the Amiga keyboard (left to right, top to bottom). This mode is activated once the visual has loaded by simply pressing the space bar. Using the arrow keys or the mouse button while the display screen is activated changes your interaction to the Manual Sequencing mode. Here, you can change the speed and forward/reverse direction of the visual (if it's an animation). "Direct Play" mode is activated by pressing the key that the visual was assigned.

The program can tell if your visual is a single frame IFF or an animation, and also how the animation file system is configured (.ANIM, .RIFF, etc.). EP can read all of the standard Amiga painting and animation formats. All of this information is listed on the control screen, so that it can be edited.

THE IMAGE CONTROL SCREEN

An image is any Amiga visual that is not an animation. The first control parameter in EP that addresses images is the "Hold" function, written as Minutes/Seconds/Frames (1/30 of a second). These can be changed so that the image is set to remain on screen a certain amount of time for automatic mode. There is a toggle for color cycling that can be set to start the cycling process. Color cycling can also be toggled in real time by using the TAB key when the image is on the display screen. To the right is a very handy display counter that tells you how large your file is. The nicest part of slide-showing images in EP is that color and resolution have no effect on the range of imagery involved.

RIFF ANIMATIONS

RIFFs are special Amiga animation

files that seem to be on the way out because of the ANIM standard. Many Amiga programs, however, still use that standard, which makes EP useful as a utility if you happen to create animations in that format. In a RIFF sequence you can control the Looping, Speed, and Double Buffering of the animation in EP. The Double Buffering can be switched to Automatic, Off, or On to give you the best results should palettes change from one frame to the next. There is also a handy frame counter next to the size display which tells you how many frames the animation holds.

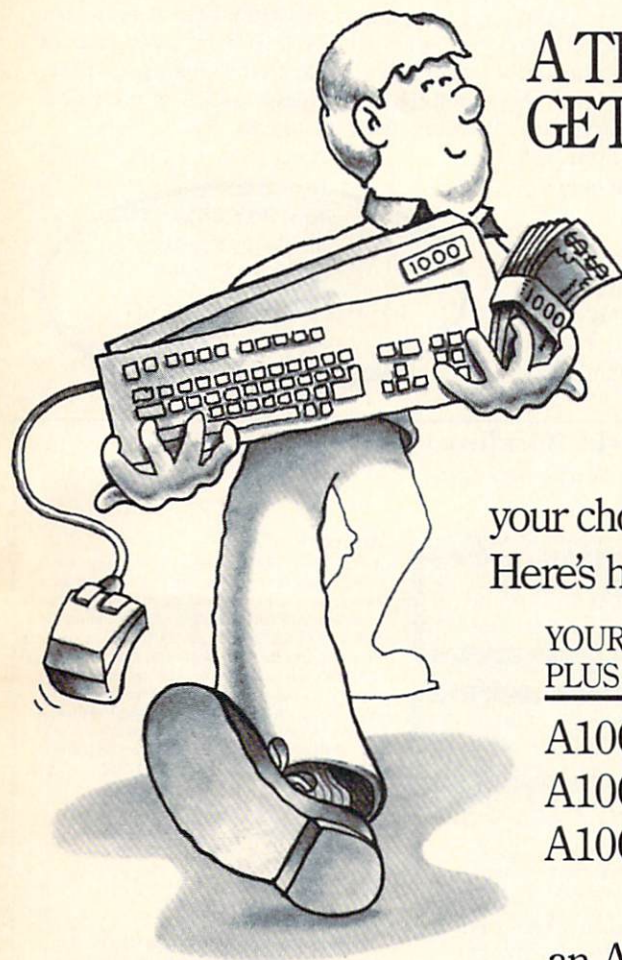
ANIM FORMAT

Whereas RIFF files are basically single IFF frames, ANIM frames are saved by using Delta-compression routines, meaning that only the differences between consecutive frames are saved. This allows for more frames on a disk, but introduces some strange problems to the playback, especially DPaint III animations. Reverse looping is done by altering the frame sequencing, so not all reversing produces the desired result. The "Reverse" option in EP actually writes a series of RIFF frames to the RAM disk, which can cause a low memory situation to occur. Setting the "Cycle" control to AUTO will allow the program to sense if the animation was saved with an intended looping. There can be quite a bit of artifacting at high speeds, so the best advice is to experiment and tailor your specific animation to the desired result. With animations created in both DPaint III (Electronic Arts) and in PageRender 3D (Mindware International), I achieved the best results by turning Reverse Off, and Cycling to Automatic. I also had to adjust the speeds to prevent artifacting (leaving tracers of a image on the screen). Something else I discovered is that by holding the right mouse button down, I could flip quickly among the first frames of all of the animations.

ENVIRONMENTS

EP can save the settings and disk paths that are included in your animation/picture sequence. It calls these settings "environments", and they can also be nested. This means that they can be saved to a key as well as a disk file, which allows a whole new environment to be called from within a sequence. If a hard disk is the storage path, this would make EP perfect for interactive displays, like those utilized at customer kiosks at airports and malls. When environments are assigned to a key, a window is activated for input that asks

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the program whether to automatically include the environment key in a playback sequence (like an automatic branching sequence).

GLOBAL CONTROLS

There is a PREFS window (not to be confused with the Amiga Workbench Preferences screen) that sets global parameters for the visuals. The first choice that you have relates to "Display Protection" (Chip RAM). With this toggled to "Off", EP eliminates one of the double buffering screens. Users without the Super Agnus upgrade will want to leave this in the ON position. With my suped-up Amiga 2000, I found that I could run the animations at faster speeds by turning this OFF. Two more input areas follow, Load and Display. If you select to load ALL, then all of the imagery will load into memory at once and be available for instant playback. EACH starts the display of a file more quickly for reasons that I do not understand (you would think it would be the opposite). DISPLAY ALL will start the playback as soon as the imagery is loaded from the disk in the AUTO mode. With DISPLAY FIRST, only the first image will be displayed until you hit the arrow keys or a mouse button. DISPLAY WAIT will show a black screen until a key is pressed.

Different combinations of the LOAD and DISPLAY options produce varying results, which are covered in the manual. "CYCLES" sets the number of times an AUTO sequence will play before looping back. The setting "-1" will loop indefinitely, or until you interact with mouse or keyboard.

PATHS TO GLORY

Images and animations can be saved in any of five formats: ENVIRONMENTS, IMAGES, RIFFs, ANIM3, and ANIM5. You can also choose whether or not to generate an associated icon for the file. Pressing the CAPS LOCK key during a presentation will set the Remote Control mode in action, allowing you to step forward and backward through a presentation. Stills and animations can be speed controlled by using the numeric keypad and the plus and minus keys. Single IFF images can be appended to any single key, giving you the power to create animations from still frames on the fly (as long as your memory be willin').

OTHER TOOLS

Separate utilities are also included on the EP disk. You can cut and splice previously saved animations, or convert back and forth between the RIFF and ANIM

formats. With the RIFF splicer, you can combine single frame images of different resolutions and palettes into a single animated sequence. The manual notes that EP was designed to interface with Elan's Invision (the previously mentioned software brain for A-Squared's Amiga Live digitizer), and that it converts the associated animations to the RIFF format. Invision Plus, however, saves in only the ANIM format, a correction that EP will probably take into account in its next upgrade.

THE BOTTOMMOST LINE

At the heart of it, EP can save the Amiga artist/ animator money and time. It is exactly the type of utility that the Amiga community needs in this time of animation program glut. It turns your Amiga into an interactive professional editing console, among other things, and it is priced far below what it is worth.

•AC•

Elan Performer

ELAN DESIGN, INC

P.O. Box 31725

San Francisco, CA 94131

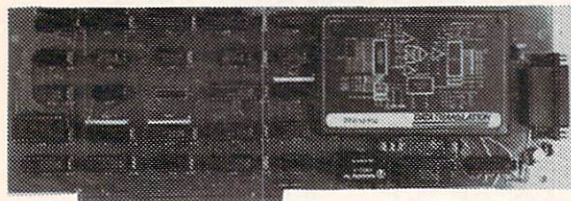
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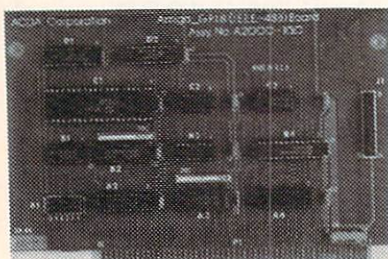
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Proto-40K is the first and only fully featured data-acquisition and process-control expansion card for the Amiga 2000. The Proto-40K features a 16 channel 12-bit multiplexed analog-to-digital converter, two 8-bit digital-to-analog converters, a 3-channel programmable timebase, 16 digital inputs and 16 digital outputs. Proto-40K also features a highly stable instrumentation amplifier with programmable gain, multiple triggering sources, and on-board digital waveform generation. Data acquisition and process control projects are a snap to develop with the Proto-40K Data Acquisition System (DAS) software and 'C' source code. Sample application programs and source are included for each of the Proto-40K functions. Now sold in various custom component configurations. Buy only the functions you need. Call for new lower pricing.

Amiga GPIB



Amiga_GPIB is a General Purpose Interface Bus card for the Amiga 2000. This half-length expansion card performs all the Talker, Listener, and Controller functions of the GPIB (IEEE-488) protocol. One Amiga can control up to 14 GPIB devices. Includes Command Function Library (ACDA GPIB CFL), test application program and 'C' source code driver. \$495.00



DigiScope

DigiScope is a digital storage oscilloscope emulator that works with ACDA's Proto-5K, Proto-40K or other parallel-port digitizers. DigiScope has 16 independent waveform buffers, a digital signal processing (DSP) package, a Fast Fourier Transform (FFT) package and a filtering package. DigiScope has extensive waveform scrolling functions that work in a resizeable scope window in high or low screen resolution. DigiScope offers a complete set of archival functions and the standard complement of signal statistics. DigiScope also features an extensive digital waveform generator package. \$139.95

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The Amiga FFT C Package Provides all the source you need to perform detailed frequency analysis utilizing a complete set of Fast Fourier Transform (FFT) routines. The package includes C source for derivation of the Power-Spectrum, Phase-Amplitude Spectrum, Inverse FFT, several window functions and user interface functions. \$152.00

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New Products and Other Neat Stuff

by Elizabeth G. Fedorzyn

SHOW AND TELL REVISITED

If you've noticed your Amiga sporting a white chalk line across its back side it may just be that it's been moonlighting at the Southern Alberta Institute of Technology (SAIT) in Calgary.

The 2000 Series is serving as the main instructional vehicle at the newly founded Commodore Corporate Media Centre, a centre specializing in corporate media instruction and production. The lab provides a wide range of multi-media techniques to corporate clients and students enrolled in the institute's full-time communication programs. Techniques studied at the centre include animation and titling, painting, desktop publishing, slideshow production, sound and music digitizing, and MIDI music production.

Evening courses in graphics, animation, and desktop video are now underway and a two-year program in corporate media production is being developed. The lab will also provide additional options for students enrolled in SAIT's Cinema, Television, Stage and Radio Arts (CTRS) program, which currently offers training in radio, television, and broadcast news.

Corporate training professionals are encouraged to contact the institute for a demonstration of interactive training. Consultation is available for com-



Amiga-based: SAIT's Corporate Media Centre.

panies wishing to develop computer-based training centres of their own.

*For more information, contact:
Dick Bourne, Lab Supervisor
Southern Alberta Institute
of Technology
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Calgary, Alberta
Canada T2M 0L4
(403) 284-8064*

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(continued)

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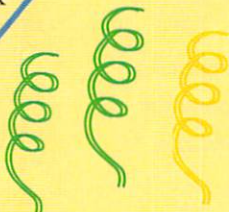
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For a limited time, Commodore Business Machines is offering an upgrade program providing A1000 owners the opportunity to upgrade to any A2000 series machine at a substantially reduced cost. The offer, which runs through March 31, 1990, will allow A1000 owners to return their machines to a local participating dealer, whereupon they may then purchase an A2000 series machine for as little as \$999.00.

Commenting on the upgrade policy, CBM Vice President of Marketing Lloyd Mahaffey said, "Amiga 1000 owners are among the most dedicated personal computer users. We developed the offer in part to energize this important base. It is also part of a much broader strategy to establish a more dominant position for the Amiga in an industry which is finally beginning to catch up with the machine's capabilities."

Pricing for the upgrade policy is as follows: A2000: \$999.00 + trade-in; A2000HD: \$1,599.00 + trade-in; A2500: \$2,999.00 + trade-in. The offer is valid only at participating dealers.

In other Commodore news, CBM unleashed a plan to compete more effectively in the business market. Until March 31, 1990 the company will offer a system that includes an A2000HD equipped with a pre-installed MS-DOS-based bridgeboard, 1084 monitor, and Amiga WordPerfect, version 4.1.

The system, according to Marketing VP Mahaffey, was developed for business professionals seeking a cost-effective, multi-purpose, multi-tasking personal computer to accomplish a variety of tasks,

from word processing to graphics productions and spreadsheets. The system is also the perfect setup for those requiring MS-DOS software for the office, yet desiring the graphics capabilities of the Amiga away from the office.

And in yet another promo package, CBM and Dr. T's Music Software recently announced a joint promotion designed to target the professional music market.

The package deal will bundle specially priced A2000HD computers and a MIDI interface from ECE Research & Development along with Dr. T's Keyboard Controlled Sequencer version 3.0, the Copyist Apprentice scoring and transcription software, and a coupon for a Dr. T synthesizer editor/librarian of the customer's choice.

The offer runs through May 31, 1990 and is being announced through a national and regional print advertising campaign. Customers may collect the software at the time of system purchase by presenting the print advertisement/coupon to their local dealer.

Commodore Business Machines, Inc.
1200 Wilson Drive
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Inquiry #220

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(617) 244-6954
Inquiry #221

ECE Research & Development
1651 N. Monroe St.
Tallahassee, FL 32303
(904) 681-0786
Inquiry #224

SCANNER PLUS

A recent entry into the Amiga marketplace promises to provide Amiga desktop publishers with some impressive new DTP tools. Migraph, Inc., developers of high-quality graphics software for the IBM and Atari ST recently released their popular 400 DPI hand-held scanner for the Amiga.

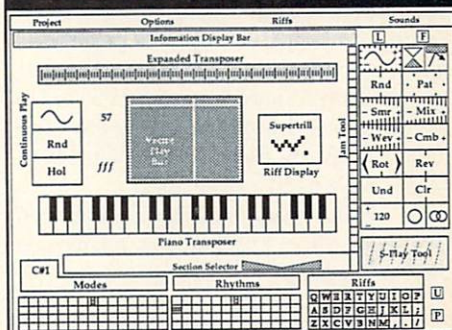
The Migraph **Hand Scanner** features four adjustable scanning resolutions including true 300 and true 400 DPI. Its scanning window (more than 4" wide) comes complete with a scanning speed

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THE DYNAMIC RIFF SEQUENCER

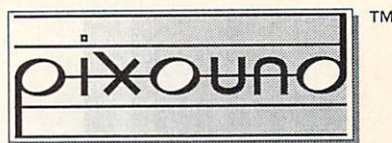


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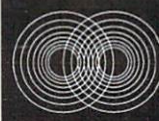
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Miami, Florida 33158

indicator light. Three dither patterns are provided for scanning color and halftone images, not to mention a special setting for scanning line art. Also, an adjustable contrast control can be used for lightening and darkening images.

The Hand Scanner comes with **Touch-Up**, a full-featured monochrome image editor. Touch-Up sports powerful editing functions, a complete paint program, and a variety of special effects. Images from Touch-Up may be exported to Amiga publishing programs like Pro Page and PageStream. And images from the IBM, Mac, and Atari ST can be used.

The hardware/software combination package works with all Amigas and require 1MB of memory.

Hand Scanner and Touch-Up
 MiGraph, Inc.
 200 South 333rd Street, Suite 220
 Federal Way, WA 98003
 (206) 838-4677
 Price: \$399.00
 Inquiry #225

ON THE MOVE

Grab onto your font, because Kara Computer Graphics has just introduced their latest additions to the Kara Fonts line. And these two new font packages—**AnimFonts1** and (you guessed it) **AnimFonts2**—will stand still for no one.



Kara's latest:
 AnimFont1 and 2.



Designed exclusively for the Amiga, these two new typefaces come in a standard keyboarded version and an animated version. The keyboarded version is compatible with all programs compatible with the rest of the Kara Fonts line, while the animated version is compatible with DeluxePaint III, DeluxeVideo III, and programs capable of bringing in the Anim Brush format. Included with each font are additional color palettes in the Brush drawer for a wide variety of looks. The palettes are pre-tested in a waveform and vectorscope for best results in transferring to videotape.

AnimFont1 features a new 8-color font called ChromeScript, which is a formal, Roman-type script in caps and lower case. When used in the animated form, each character in an animation appears to be handwritten across the screen. Appearances achieved through the additional palettes include chrome, reflective gold, copper, and bronze.

A new 8-color font, Bullion, is featured in the AnimFont2 package. Bullion is a dimensional, beveled, highlighted, uppercase Gothic font. The AnimFont version rotates 90 degrees unto the screen. And as the font rotates on the "Y" axis to the left, a glint of light travels from left to right across the letter/word(s). This second font comes standard in gold with additional palettes such as metallic and silver.

Both AnimFont1 and AnimFont2 come in a one-disk set, and are designed for use in a whole host of applications including video, animation, slides, business, and desktop publishing.

Kara Computer Graphics
 6365 Green Valley Circle, No. 317
 Culver City, CA 90230
 (213) 670-0493
 Price: \$49.95
 Inquiry #222

MOVE OVER DENNIS HOPPER

Cotton candy machines the size of car ports, giant bees with an insatiable appetite for carnival cuisine, and killer rosebushes — it's either a bad sixties flashback or a new Amiga game release that appeals to the absurd, often unnerving images of the REM state.



Hold on to your pajamas:
 MicroProse's *Weird Dreams*.

In **Weird Dreams**, the new graphic adventure designed by Herman Serrano and marketed by MicroProse Software, you are a psychiatric patient undergoing treatment. But you know what they say: facing your problems is half the battle. *They* never played *Weird Dreams*.

In this stroll through the subconscious, your objective is twofold. First, you must figure out how to escape unscathed, unpummeled, undigested from your current surrealistic situation. But then in order to win the game, you must figure out its overall objective—sort of the method to the madness. So, clad in just your black-and-white checkered pajamas, and armed only with your ability to decipher the puzzling images before you (and an occasional flying fish), you are placed on the road to recovery.

Should you find yourself particularly stumped, you might want to consult your Player's Therapy Guide. But keep in mind that nothing comes for free—especially in the area of psychiatric care—and your dependency on consultation might drive your bill sky high and render you a good candidate for shock therapy. You'd probably do better to take an extra swig of oxygen and face the Chicken Monster head on.

Weird Dreams
 MicroProse Software, Inc.
 180 Lakefront Drive
 Hunt Valley, MD 21030
 (301) 771-1151
 Price: \$39.95
 Inquiry #223

•AC•

HELP WANTED

Supra Corporation, a major manufacturer of Amiga® add-ons and modems, is looking for top-notch employees:

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We are looking for qualified engineers for several projects. Candidates should have a BSEE, or equivalent. Experience in the following are desirable:

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- c. video
- d. telecommunications equipment
- e. low-level programming of microprocessors

PROGRAMMER

We are looking for experienced programmers who have worked on substantial projects in a team environment. Knowledge and experience in the following is helpful:

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To maintain its excellent customer support, Supra is adding to its Technical Support department. Responsibilities will include telephone and written technical support as well as other support functions. Candidates should have the following:

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- d. excellent troubleshooting skills
- e. good writing skills
- f. well organized
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Supra is currently adding to its in-house Sales staff. Applicants should have:

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- b. knowledge of Supra's products and the Amiga computer
- c. previous sales experience
- d. computer store/distributor background helpful

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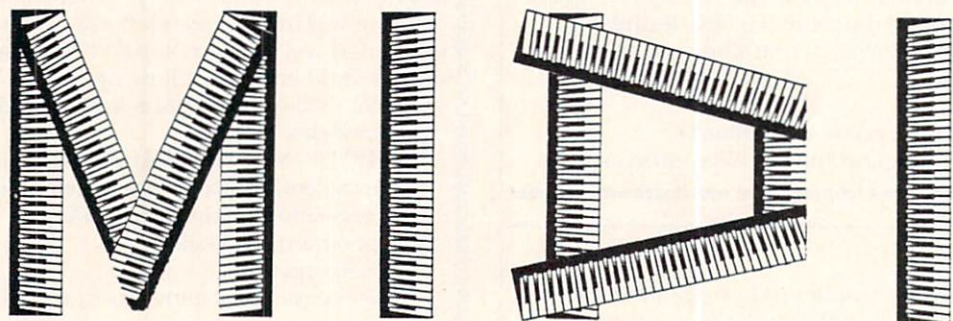
TO APPLY

Please send a resume (including qualifications and previous experience) and salary requirements to: Supra Corporation, John Wiley, President, 1133 Commercial Way, Albany, OR 97321 USA.



Supra Corporation

An Introduction to



We Amiga folks are an obsessive lot. I keep hearing from folks

around the country that they are spending twenty-four hours a day in some interaction with their Amiga. Not that I think this is healthy, but I can understand. After all, I could almost admit to the same thing.

Being both an artist and musician, I've searched out all of the Amiga tools, software and hardware, that I could afford (and some I couldn't) to deepen my pursuits. The music software that's out now for Amiga users ranks with the very best on any system, and in many cases surpasses it.

Although the Amiga has some wonderful sound libraries that fully support its four internal voices, I have become convinced that the music that I enjoy composing and recording needs to interface with MIDI devices to reach its potential. The price of MIDI compatible players has come way down in the past three years, and MIDI is definitely a buzzword in the micro market at present.

The odds are about even that one of the major investments an Amiga owner will make soon after purchase of the initial system is a MIDI capable synthesizer, and I can only suspect that the sales of MIDI synths this past holiday season was better than the year before (I know it was in my town).

Every article about MIDI begins by telling you that MIDI is an acronym for "Musical Instrument Digital Interface", so there!..I've done it too! The definition itself, however, says little about what MIDI actually does, or the reasoning behind it. MIDI is not a "thing". Instead, it is a software/hardware standard for interconnecting synthesizers, computers, and many other devices through specially configured MIDI cables. A good MIDI interface can send, receive, and pass thru MIDI messages, which are themselves byte size codes that carry musical performance information (such as "change voice", "play note", "stop note", and "change instrument", as well as other commands). Although MIDI is the closest format to a "standard", the MIDI "standard" is constantly undergoing minor revisions (with some major ones suggested for the near and far future).

The idea of manipulating electronic signals to produce "pure" electronic music has its beginnings in the early twentieth century. In 1903, Thaddius Cahill, an American entrepreneur designed an instrument that could send electronic tonalities over the phone lines, and he named it the Telharmonium. He was planning to market these tonalities to

subscribers. Just imagine the thrill of picking up your phone and hearing a musical

tone (a pre-cursor of the tonalities of dial-tone signals). Soon after World War II, the market was flooded by affordable tape recorders. Creative musicians began to see that this medium would be perfect for experimenting with sound. They began to physically cut the tape into strips after recording sections of it, then pasting it together again in different arrangements. The first voltage controlled synthesizer was utilized in the 1960's in the recording of "switched on Bach" by Walter Carlos. The Microprocessor came to us in the late sixties, the real beginning of the MIDI era.

THE AMIGA AND MIDI

The Amiga was not the first computer to realize MIDI technology. In 1984, Apples, Atari 800's, and Commodore 64's were breaking creative ground with MIDI devices. But the arrival of the Amiga has propelled MIDI and musical synthesis into a new level of creativity. None but the Amiga offer two-channel stereo sound from four independent sound generators (the PORTIA chip). With four voices and an expanding wealth of software to manipulate the possibilities, the Amiga with MIDI is now a stand-alone music machine in performance and the professional studio.

(continued on page 22)

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(continued from page 20)

ECCE MIDI?

Artistic creativity is grounded in experimentation, and the tools of experimentation are continuously being revised and updated. MIDI takes some of the repetitive and necessary tasks of music composition out of the realm of repetitive drudgery and into the arena of discovery. MIDI is a "way", not a device, although the use of the MIDI standard does indeed require some very specific devices to be audible. MIDI cables interconnect MIDI synthesizers and other devices together. When you purchase MIDI cables get the best, since the quality of the signal is what

MIDI is really about. Cables should never exceed fifty feet (about sixteen meters) in length, with much shorter connections if possible. This is because the "sound events" that pass through these cables are sent and received in discreet "chunks", comparable to the serial port telecommunications standards.

THE MIDI SIGNAL

MIDI is transmitted serially, one bit at a time, at the rate of 31,250 bits per second (31.25Kbaud). MIDI code is transmitted as discreet ten bit bytes, consisting of a start bit, eight code bits, and a stop bit. The stop bit is added for transmission purposes, but

is stripped off by the receiver. Some of the code conveys information about musical notes (note-on, note-off, change pitch, etc.) and some of the codes convey "patches", that is, where subsequent messages are to be rerouted to. MIDI can be used to transmit continuously "sampled" data. A seven bit sampling rate equals 3125 Hz or 3125 cycles/sec., while a fourteen bit rate would be 1562 Hz (cycles/second). The signals themselves contain discreet codes. For instance, the "note-on" command contains a "note number" (60 is standard for middle C), a "channel number" that the note is destined for, and "velocity" (read as "volume" in the range of 0-silence-to 127-loudest).

SYNTHESIZERS AND OTHER MIDI DEVICES

MIDI communicates on three separated lines, each of which requires a separate MIDI cable, and each of which determines a specific hardware configuration. These lines are labeled "IN, OUT, and THRU". All MIDI compatible instruments, have all three of these options. MIDI OUT means that the MIDI signal is processed in the host unit and then sent on its way to another synth or device. MIDI IN means that the signal was initiated somewhere else and is soon to be processed in the target device. MIDI THRU allows the signal to pass through the implicated hardware. Some MIDI units, like the Amiga, need special interface units to allow for connection to synthesizers and other MIDI compatible devices. These devices modulate the previously incompatible signals. They change the RS-232 serial port rates to 31.25 Kbaud. There are several excellent brands available. Some Useful Electronic Music Terms you should know:

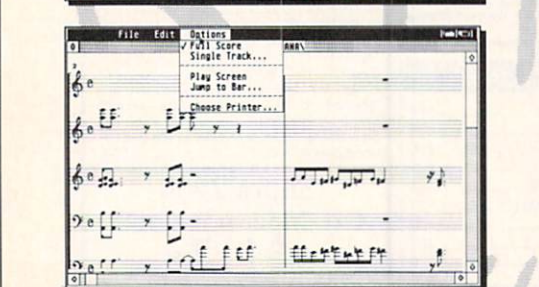
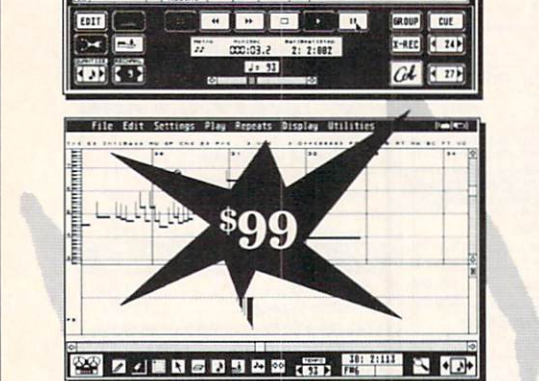
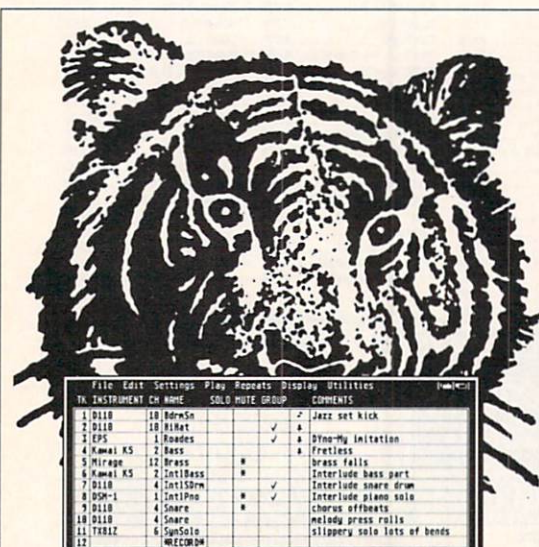
Sampling—translating analog sounds into digital units "readable" by computers (samplers are sometimes contained in separate keyboard devices, and other times, referring to hardware interfaces that connect to a computer).

Sequencer—a super tape-recorder-like unit and processor, sometimes in software form (as in Amiga software products).

Polyphonic—more than one sound at a time.

Timing clock—encoded MIDI timing units; 24 MIDI clocks per quarter note (at a metronome marking of 60, a quarter note = 1 second of time).

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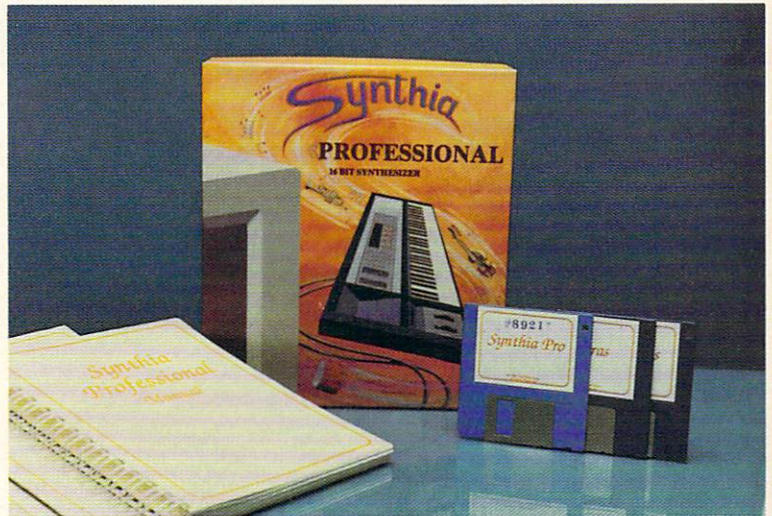
Synthia Professional

Coming up with interesting new sounds is one of the true challenges for today's musical artists. Modern electronic instruments are capable of producing a virtually unlimited variety of heavily processed buzzes and beeps, not to mention far more sophisticated sounds, but, alas, most of these are not terribly useful for music-making.

Well, make that *commercially* successful music-making. It can take an incredible amount of trial and error to come up with that elusive new sound that's guaranteed to catch and hold the mass audience's interest. Evidence of the difficulty of programming worthwhile sounds is the fact that most musicians leave sound creation to a handful of professionals who spend entire careers developing techniques that go beyond the usual "poke-and-hope" methods.

Because it is much easier to record the sound you want (if it exists) than to program it, MIDI samplers such as the Akai S900 and Ensoniq EPS have become quite popular among musicians in recent years. Want the sound of a screeching mud turtle for your new percussion track? Just stick a mike in the little guy's face for a few seconds, then take the tape back and feed it into your sampler, and you can play a whole chorus of turtles in tune if you like.

You probably know that the Amiga computer serves as fairly good sampler when equipped with the proper hardware and software. The Amiga's electronics also include a capable hardware synthesizer. Synthia,



introduced in 1987 by The Other Guys, capitalized on these capabilities by allowing you to synthesize samples entirely within the computer. That is, the program combined various formulas for sound synthesis with parameters entered by the user to create new sounds, which could then be saved to disk as IFF sound files to be used by other programs such as Deluxe Music Construction Set and

Sonix. It was an interesting and useful program, but limited by the Amiga's eight-bit resolution and its inability to communicate with external samplers.

Now comes Synthia Professional, a completely revised and updated product, and a most impressive one, I don't hesitate to add up front. This versatile sixteen-bit

EPS. It's too bad the programmers didn't decide to directly support such popular samplers as the Emax, Casio FZ1, and the various Akai samplers.

Synthia Professional is a completely modular program. It's fully multitasking and uses the Workbench screen which makes it a snap to access utilities such as clocks and text editors, while you are using the program. Each synthesis and effects

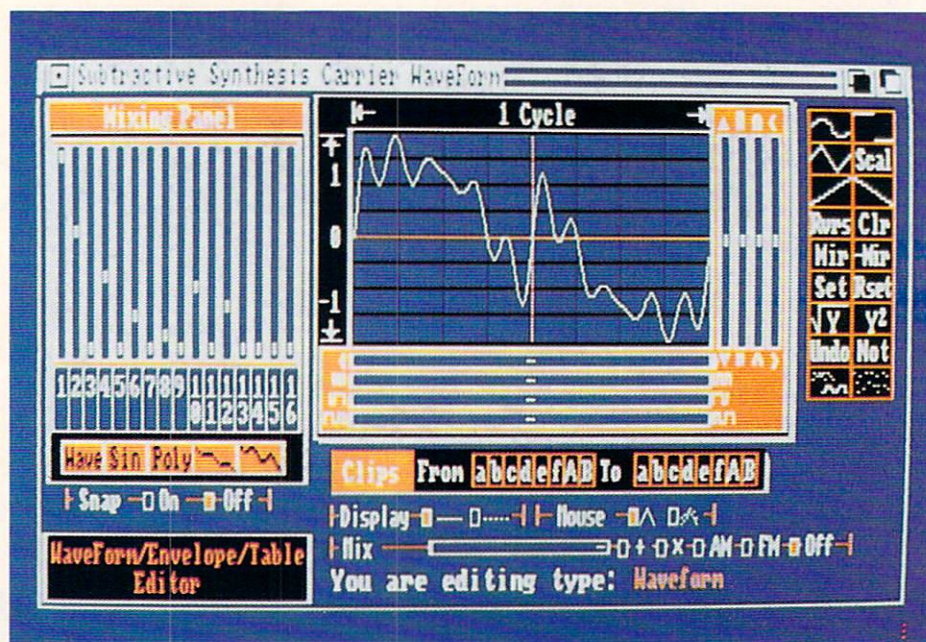
technique is contained in its own window, which is just large enough to contain the controls therein, and is accessed from drop-down menus. Thus, you need never deal with extraneous or irrelevant controls—only those that pertain to the task at hand. Each module contains its own unique set of controls with several that are common to all. For example, the Keyboard, Make, and Undo gadgets, which resemble small square buttons, are found in approximately the same place in each module's window.

When you click on a module's Make gadget, Synthia

Professional generates a MultiSample or instrument, which is a set of samples strung out across the keyboard. Each sample has a root key (the key to which the original sample is assigned), a low key, and a high key. For example, you might generate a four-sample trumpet sample for natural transitions from low to high notes. The root keys might be C2, C3, C4, and C5, the low keys the same, and the respective high keys B2, B3, B4, and B5. The sampler used to play back the instrument, whether the Amiga or a keyboard, creates the octaves between the root notes by speeding up or slowing down the sample playback rate.

SETTING PARAMETERS

The New Instrument Parameters module lets you customize MultiSample settings in great detail. You can set the number of samples, the root, low and high keys for each sample, total sample length, high sample length, and for 8SVX sounds, you can set the requirement that each successive sample can be twice the length of the previous one. Other settings here include sample rate, interval in notes between generated samples (defaults to one octave), duplicates (useful for stereo samples), and various loop settings. For a fast configuration, there are a number of useful multi-setting presets corresponding to the various supported Amiga and MIDI sampler formats. The



Above: Subtractive Synthesis Carrier Waveform

software synthesizer combines eight synthesis methods with eleven effects processing modules to provide a virtually unlimited range of techniques for the relatively easy creation of new, interesting and unusual sounds.

Best of all, Synthia Professional now supports transfer of samples between the Amiga and MIDI sampling keyboards and modules. If you have more than one sampler, you can use the program to transfer sounds between them at full sampler resolution! Directly supported samplers include the Korg DSS1, Roland S330, and S550, Ensoniq EPS, and the program also supports the universal MIDI Sample Dump Standard (SDS) used by most other samplers. Unfortunately, since SDS is a fairly limited specification, the program works much more efficiently with the directly supported samplers. For example, with the Korg you can transfer an entire multisample at once. Synthia Professional also directly supports stereo/multi-channel sound on the S330, and stereo/velocity-switched sound on the



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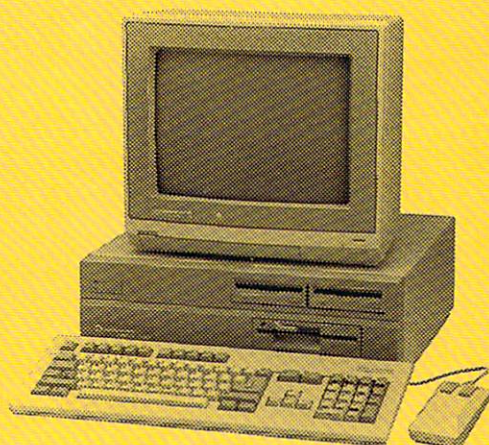
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availability of these presets, plus the ability to save any setup as a startup default, are just a couple of examples of the many thoughtful touches that make this program a joy to use.

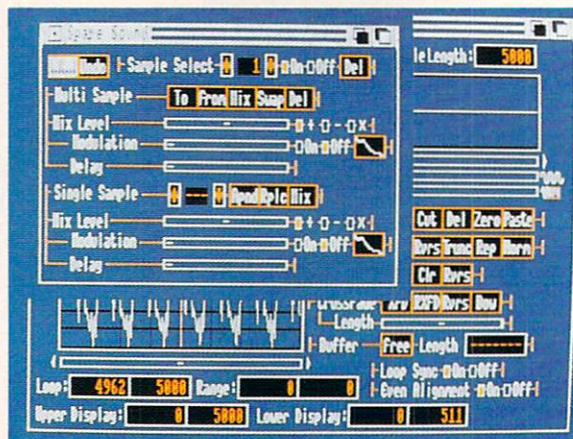
THE SYNTH MODULES

While it is easy to synthesize static, unvarying tones, they are generally not very interesting when used in music. Natural sounds engage our attention because they vary in their harmonic content over time. Thus the biggest challenge of synth programming is to create sounds whose timbres similarly evolve over time. Synthia Professional's eight Synth modules were designed with this goal in mind, but use vastly different techniques to achieve it. These modules are: Subtractive, Additive, Pseudo-Additive, Plucked String, FM/PM, Interpolation, Drum, or Noise Drum. There are example setups included for all modules.

Subtractive is the oldest form of synthesis, in which a repeated soundwave is "sculpted" with filters, altering the volume, and other effects to produce realistic sounds. While Subtractive synthesis is conceptually quite simple, all of the controls used here are found in every other Synth module, so we'll cover each briefly. The Keyboard gadget brings up a window with an 88-key piano keyboard gadget, playable with the mouse, and various other

controls. You have access to all 88 keys via the Amiga keyboard, but not at one time; you can shift up or down a few octaves if necessary with the function keys. The currently selected sample is indicated by hash marks on the piano keyboard gadget. The keyboard window is interactive with other modules, so that if you change the current sample in any window, the keyboard window instantly changes to show the keyboard range occupied by the new selection. If you play a note from the Amiga or MIDI keyboard, hash marks appear temporarily at the bottom of the struck keys. Unfortunately, there is no indication as to which Amiga keys correspond to notes on the keyboard.

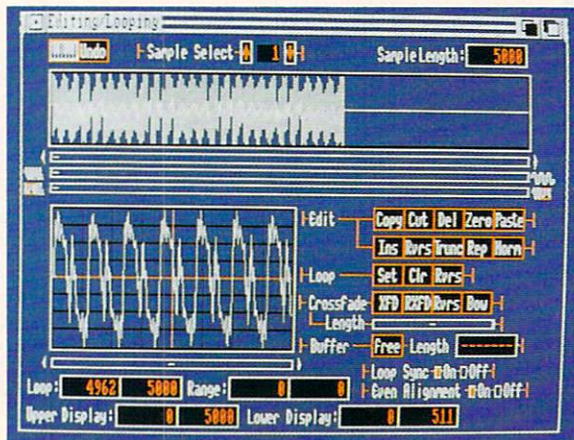
Settings here also let you play your MIDI sampler with the Amiga keyboard or mouse, or play the Amiga internal sounds with your MIDI keyboard, or both. There are independent MIDI channel assignments for incoming and outgoing signals. In Local mode, you can set whether a single



Above: Spare Sound Module

sample is to be played back, arrayed across the entire keyboard, or the entire instrument. You can also set a default velocity and sensitivity for notes coming to and from the Amiga's MIDI port. Finally, a speaker gadget lets you hear the current sample at the root key while displaying the root key on the keyboard.

As mentioned, there are also Make and Undo gadgets in each Synth module. The Make gadget generates a new sample or set of samples using the current settings, while the Undo gadget restores the current instrument to its state before the last change implemented with Make. The latter is particularly useful as it allows instant comparison of a sample before and after conversion.



Above: Sample Editor Module

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Before you use Make, you can select whether the parameters used (i.e. number of samples, sample rate, etc.) are taken from the New Parameters settings or from the current sample, which may have been loaded from disk or from a sampler and have completely different settings from the New Parameters module. In either case, you can also determine whether new samples are created for each sample in the current instrument. By changing these settings each time you generate a sound, turning on only one sample at a time, you can easily create a keyboard full of new and completely different-sounding instruments in a short while! Or to take another example, you could load in an Amiga four-octave bass instrument, then quickly replace each of the upper octaves with synthesized drums, organ, and guitar for an instant one-man band.

The next setting in the Subtractive Synthesis module is one of the most common and yet most interesting gadgets in Synthia Professional: the Waveform. Clicking on it brings up a window that deserves a book in itself. The Waveform editor is a full-screen window containing a central graph surrounded by a bewildering array of settings. You might spend all day here, but you'd never hear anything, because there is no way to preview individual wave sounds. There is a sixteen-slider "mixing panel" with five different mixing options. To the side and below the graph are eight sliders that let you control vertical and horizontal size, position, stretching, and tapering of the graph. You can also draw directly into the graph window with the mouse: a setting lets you draw a solid or "fuzzy" (e.g. for woodwinds) line. There are eight different "clips" settings for storing waveform setups in memory for later retrieval. This is particularly handy since the same window is used for Envelope and Table settings. There is a particularly powerful Mix setting that performs intermodulation of waveforms in various ways. Last, but by no means least, there are eighteen gadgets for implementing built-in waveforms and preset waveform manipulations.

The next slider lets you alter the frequency of the root note generated, making higher or lower than the default specified in the New Parameter or current sample setting. Connected to this is the next slider, which determines the degree to



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which the frequency is modulated by its related envelope (set with the graph window, described above), if the envelope is turned on.

Finally, if a sample already exists for new samples to be generated, you can set the mix level between the two. The program defaults to 100%-that is, the new sound completely replaces the old. Using the associated modulation setting and its envelope, you can set a waveform that modulates between the old and new sounds over time. Modulation types include additive, subtractive (for a flanging effect), and multiplicative "ring" modulation.

The next Synth module, Additive Synthesis, lets you use the waveform editor to define a sound's first 32 natural or integral harmonics. Pseudo-Additive synthesis also uses 32 waveforms, but combines them over time via rapid interpolation rather than as overtones. One example provided of the latter technique, called Electrola, sounds uncannily like a violin. In both cases, each waveform can have its own amplitude and modulation levels, as well as its own AM envelope.

Synthia Professional's "Plucked String" synthesis mode uses a special algorithm to simulate the vibration of strings in plucked instruments such as guitars, banjos, and mandolins. This technique is also useful for simulating other sounds with high initial harmonic content and rapidly changing timbre. Settings include string type (nylon or

steel) with an optional adjustable flanging effect, plus stretch factor. Supplied examples include a couple of basses, guitar, and a percussive "woodbell".

A simplified form of Frequency Modulated synthesis, popularized by Yamaha and its DX7, is provided in the FM/PM Synthesis module. While the manual does not go into the differences between them, both use one waveform to modulate the phase angle of another. The manual does say that FM yields more "drastic, complex, and exotic" sounds than PM. In both cases, you set waveforms for one carrier and one modulator, and if you like, an "index" which modulates the modulator. The index is used effectively in the FM Saxophone example included.

Interpolation synthesis uses, like Pseudo-Additive, 32 waveforms, but in this case you can set a delay between each waveform. As with most scales in Synthia Professional, the delay setting is relative (to the left for fast, to the right for slow) with no quantitative settings available. Fortunately, you can always save a setting down to the last detail at minimum cost in disk space, as long as you do not save the sample along with it. Example interpolative setups include a realistic piano and a bell.

Finally, we come to Drum and Noise Drum synthesis. These both use a hybrid form of synthesis to recreate the sound of anything hollow that you hit with a stick. Unique settings include decay, emphasis, and bass boost, which give you a choice of Muffled or Booming. And Noise Drum adds a Snare setting, which can be Minimal, Tight, Medium, or Loose.

THE EFFECTS MODULES

In addition to its various synthesizers, Synthia Professional offers a bountiful selection of digital electronic sound processing techniques, collectively known as effects. Each of these uses as input an existing sample, whether loaded from an Amiga disk, downloaded from a MIDI sampler, or created with Synthia. While most of the effects emulate those available with outboard MIDI effects modules (musical hardware), some are available only here, and certainly, the endless combinations make Synthia a truly unique and desirable tool for the sound professional even if you never use the synth modules. The disadvantage here, of course, is the amount of time required for signal processing. The outboard hardware devices do it instantly. As well, hardware effects processors permit lengthening of sounds without additional costs in memory and transfer time. But they are not cheap.

*Coming up with
interesting new
sounds is one of
the true
challenges for
today's musical
artists.*

The first Effects Module is good old Amplitude Modulation. Here you use the waveform window to create an envelope that shapes your sound's volume over time. Unlike the traditional four-point ADSR envelope, Synthia's AM module permits up to 256-point precision in the envelope. Examples include a banjo transformed from an electric guitar and percussive trumpet and violin.

The Pitch Shifter effect lets you change an instrument's pitch, either uniformly or variably over time using an envelope, useful for adding such effects as vibrato.

Ring Modulation, to quote the manual, "is a mathematical operation which works by multiplying a repeated waveform (called the 'Carrier'), by a sample...changes the harmonic and increases the harmonic content of the instrument." Thus the process, by making a dull sound brighter and more interesting, seems akin to the "aural exciter" type of processor available from several hardware companies. For the most part, it does the job although results can be unpredictable.

Angle Modulation, like FM/PM synthesis, uses phase angle modulation between two waveforms, but in this case the sample acts as modulator. Like ring modulation, this is a complex technique which requires much experimentation for fruitful results.

Filter/Noise combines a highly adjustable audio effects filter with an optional white noise generator for effects such as wah wah, whoosh, wows, wind noises, and a host of others. The filter pass type can be set to Low, High, Band, or Notch. For all types, you can set the center frequency and band width, both optionally being modulated by individual envelopes.

Next, the Graphic Equalizer works just like those expensive hardware graphic equalizers, giving you a set of sliders to adjust your sound's frequency response throughout the audio spectrum. Synthia's 32-slider software equalizer starts at 12 Hz (cycles) and ends at 16 KHz. Dramatic examples included pass the same horn sample through three different settings to demonstrate the range of effects possible.

Synthia's Distortion Amplifier gives you a choice of Clipping, Doubling, Saturation, and two Fuzz effects for those nasty guitar sounds. And the Echo/Reverb module gives you 24 (!) different echoes and reverbs, all widely adjustable with the Delay, Spacing, Feedback, Input and

Output Filter, Dispersion, and Gate controls. The Chorus module multiplies individual voices and the Flangor/Phasor/PhaseShift processor lets you add those groovy space-age special effects (e.g.) surf music.

The final effect is heavy-duty. The WaveShaper uses a powerful new sample-generation technique that lets you play with a sound's basic harmonic structure, hitherto an impossibility. Once again, the Waveform editor is used to create an important element, but this time it's a table that determines how input sections of the sound are processed. According to the manual, waveshaping is best for simulating real, complex-sounding instruments such as brass, woodwinds, and strings.

ADDITIONAL FEATURES

But that's not all, Folks! Synthia Professional also throws in several highly useful utilities for editing your samples, such as a sample editor! Seriously, this highly effective tool is as good as those selling for \$300 to \$400 for other computers, and you get all the other goodies, too. You can cut, copy, and paste sections of your sound, set and fine-tune sample loops with a variety of crossfades, and perform a number of other necessary editing functions. If only the designers had thought to include a sample preview gadget like the one in the keyboard window-aaargh!

Next, the extremely versatile Spare Sound module lets you tailor multisamples to perfection. For example, you can delete sounds from a multisample, or you can replace any sound in a multisample with any other sound. You can also build a multisample by loading or creating sounds one at a time and appending them to an existing instrument. If you have an Amiga hard disk and Synthia supports your sampler's multisample structure, you can transfer all your sounds to the Amiga, then use Spare Sound to customize multisamples far more easily than with your sampler. The only drawback is the relatively lengthy times required to transfer samples between the computer and sampler via the MIDI interface.

The Resample module is one that will be used constantly by some and not at all by others. If you have several samplers, or use the Amiga's sampling capabilities in your music, you will be thankful it was included. Resampling simply involves converting a sound from one sampling

frequency to another. If you transfer a sound between samplers that use different rates without first converting it, the playback frequencies will differ. That is, a note that's C on one instrument might be a D# on another. Conveniently, Synthia automatically performs resampling by default when uploading samples to a MIDI device.

Synthia's disk file handling section is as versatile as the rest of the program. Of course, you can save and load multisamples or single sounds. Supported sample file formats include raw, 8SVX IFF (used by Electronic Arts music programs), 8SVX LIST, Sound Designer (a Macintosh/Atari ST sample editor), Soundscape, and Sonix. But the standard format is called AudioIFF FORM and AudioIFF LIST (in 8 or 16 bits), one commonly in use on the Macintosh and that the designers predict will become a standard for Amiga. Thus, you can download public domain samples from a Macintosh BBS with a modem and use them instantly in Synthia with no conversion. You can also save and load customized window setups (any combination of windows and settings) with or without associated samples.

Finally, the Midi menu yields access to Synthia's various sampler-specific interfaces, as well as the generic Sample Dump Standard interface that can be used with most non-directly-supported samplers. Each window offers a straightforward set of controls for transferring samples between computer and sampler with special controls for some of the directly-supported samplers. It is interesting that although the manual claims that the Korg DSS1's "primitive memory management system" prevents single sample dumps and loads, Digidesign's Sound Designer supports both with the DSS1. Also, there seems to be a small bug with non-looped DSS1 multisamples uploaded to the program, which regards all samples as looped. So you must unset the loop for each sound in the multisample separately. I can't speak for any bugs with the other samplers, since I don't own them.

For the most part, though, as with its predecessor, Synthia Professional's manual is one of the best in the industry. Comprising some 200+ pages spread out over three volumes, the documentation includes tutorials, a glossary, and thorough explanation of all program functions. Alas, though, there is minimal explanation of synthesis techniques used and no reference to further research literature.

Using Synthia Professional is a bit like ray tracing which also involves a setup step which can be simple or extremely lengthy followed by the processing step. Processing of small samples is usually fairly rapid, but complex processing of large samples can take many minutes. During this time, the program is consuming most of your Amiga's resources, so multitasking really is not practical. Be sure to save your setup before running a complex process on a large sample. For example the program crashed several times (unsettling my battery-backed clock!) while doing so, using a sample that required over 500K of disk storage.

Synthia Professional comes on three disks: the program disk, an Examples disk containing those referred to in the manual, and an Extras disk with 8SVX instrument-building examples, including actual digital samples to experiment with. The program, while physically copy-protected, can be run from a hard drive using a "key disk" scheme. Do not forget to include a line like this in your startup sequence:

Assign "Synthia Pro:" DH1:SynthiaPro

You can buy protected and unprotected backups directly from the publisher. If you intend to use the program with MIDI samplers, plan on a minimum of two to three megabytes of RAM in your Amiga.

This program is a must for anyone interested in sound, and in particular, how sound can be manipulated with computers. If you own one of the directly supported samplers and like to create new sounds, buy it-you won't be sorry. If the program doesn't support your sampler, write to the Other Guys and tell them you'll buy it if they support you. It's a huge cornucopia of goodies for sound experimenters, one you could spend years with and not exploit half of its capabilities.

•AC•

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Master Tracks Pro Vs. Bars&Pipes

by Ben Means

It was slim pickins on the Amiga music range in the early days. But no more. Master Tracks Pro from Passport Designs and Bars&Pipes from Blue Ribbon Bakery, Inc. just rolled in on the noon stage, and *Amazing Computing* dispatched this fearless reporter to cover the shootout.

Over there with the Texas spurs and ivory handled Smith and Wessons is Master Tracks Pro; this sequencer has a grim understated Mac-like look that screams "this ain't no foolin' around; this is SERIOUS rock'n'roll."

And leaning against the bar sippin' a sarsaparilla with one hand and holding his sinister toolbox in the other is that mean hombre from Hotlanta Georgia — Bars&Pipes.

The tension fills the air as these MIDI note slingers size each other up until suddenly Master Tracks makes a slashing double click and pops onto the screen.

MASTER TRACKS PRO

Passport first released Master Tracks Pro in 1987 on the Mac and has since ported this best-selling sequencer to the Atari ST, IBM, and the Amiga. The prime reason to buy Master Tracks is that once you master it on one platform, you are able to use it on any of the others; you only have to adjust for the different file formats and keyboard layouts. Master Tracks has been enormously popular on the Mac market,

and virtually any pro recording studio you go to will have a Mac and a copy of Master Tracks Pro. So you can compose at home in the luxurious confines of your 13" color monitor, save your work as a MIDI file, then modem it ahead to the studio and have your sequence waiting for you on a little 9" monochrome screen when you arrive for your session. Then if you need to do any fine tuning to your sequence, you will have a familiar interface without lugging your computer from home.

Master Tracks Pro uses the venerable tape deck metaphor with 64 tracks that use a precision 240 ticks per quarter note resolution. The interface is easy to learn, and the main screens include the Track Sheet, Transport window, Conductor window, and Song Editor window.

The Track Sheet window initially shows 8 tracks and indicates whether they're set to play, mute, record, solo, and/or loop. The Track Sheet also shows the track name, MIDI output channel and any program change number.

The Conductor window shows the metronome setting and time signature, and the Transport window has the traditional tape deck controls as well as sub-windows showing current elapsed time and measure, beat, and clock tick. Finally, there are seven buttons: the enable/disable, punch in/out, count-off, click, auto rewind, keyboard transport control, sync source, and MIDI channel thru.

There is a large blank area to the right of the Track Sheet window. The manual suggests placing the Song Editor window there. This is good advice; this arrangement works well.

The Song Editor window is so simple in concept that it's hard to grasp immediately just how powerful it is. Tracks are represented as rows of little blocks; each block contains one measure of one track. Hollow blocks are empty and full blocks contain MIDI data. In the left margin is the list of track numbers (but not names, darn!) and at the top is the list of measure numbers, plus room for the song markers. Markers are nameable and moving to a marker is a simple slap of the tab key or shift-tab to go back. This gives the convenience of an auto-locator without the inconvenience of trying to remember which locate number is what part of the song. You can edit each track or group of tracks with all the usual word processor type functions like insert, delete, cut, copy, and paste. This is quick, easy, logical song editing. Fun, fun, fun.

Double clicking on any track in the Song Edit window brings up the Step Edit window where you can fiddle with editing notes til you're silly. Notes are displayed piano roll style and again all the usual word processor-type edit functions are supported. Unlike the Song Edit window where you draw a box around data to be edited, the Step Edit window makes you

grab a 'time slice' which includes all notes from 0-127. If you want to delete the notes between G3 and C4 for instance, you have to use the Strip Data requester which is a major step down in convenience compared to click, drag, Amiga-X—the jazzy way you chop out measures in the Song Edit window. The Step Editor has a palette of notes from whole to 1/64ths plus dotted values. You can also specify odd tuplets for those Zappa-like note spurts. You can call up full note information by double clicking on any note, but there's no old fashioned event list for displaying multiple fields. (Shucks!) You can do step entry with the mouse or from a MIDI controller. You can assign any keys to control step input and control the transport functions by remote. Typically, these functions are mapped to the top or bottom octave of your keyboard controller.

There are seven more windows for editing pitch bend, channel pressure, key pressure, modulation, controllers, program change and tempo map. The tempo map creates gradual or sudden tempo changes. You can program meter changes or tempo changes either by a percentage, a fixed amount, or an added/subtracted amount; the velocity and continuous controller windows also have this flexibility. The graphic display of this information makes editing easy. Got out of control with your mod wheel? Smooth out that curve! Clog up your MIDI data stream with key pressure? Thin it out! One strange twist is that you can only see about 120 out of MIDI's 255 values at a time, which can be quite inconvenient. Also, why is there no graphic velocity editing? This is a major oversight; velocity is one of the most common values to edit.

If you want to edit velocity, you'll have to use the Change pull-down menu to get the velocity requester. Other requesters allow editing of channel, duration, continuous controllers, tempo, data stripping, humanizing, quantizing and time fitting.

You can set the quantizer to any value including odd tuplets and it can affect the entire note or attacks only. Notes ahead of the beat affected and quantize intensity are both set as a percentage. In addition, you can slide notes forward or backward in time. Fit time is of special interest to people doing work for film or video that has to be a specific length. You've written a great

fit time requester and tell it how long you want the cue. It does the rest. Tres hip!

Not so hip are the screen redraws. Popping open a requester takes several seconds and when you close one, the screen goes through a series of redraws that takes almost 5 seconds. Are they using the blitter or are they telling Ami to dummy up and think like a Mac? On the positive side,

the timing of tracks is rock solid on playback, even when you're clicking around the screen.

For locking up to tape, Passport sells their MIDI Transport which reads/writes SMPTE and translates it to MTC for the sequencer to lock to. The Transport supports 24 fps, 25 fps, 30 fps and 30 fps drop.

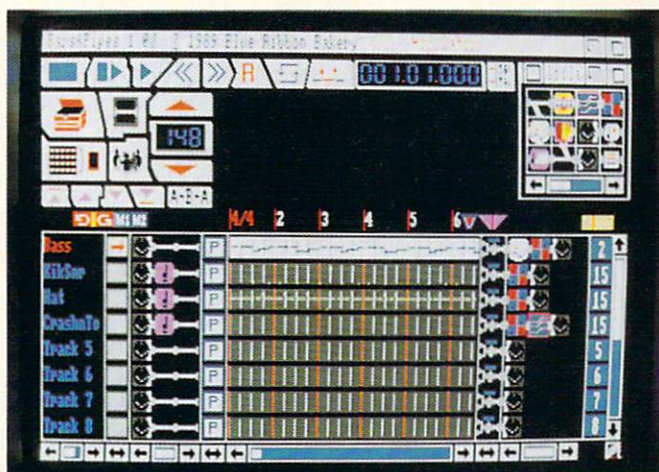
I had two main problems with the manual: 1. cheap plastic binder (c'mon guys, this is a \$395 program!) 2. no index (where was that explanation? flip, no...flip, no...flip, no.) Passport claims that the next version will have an index and will include features from their new mega Mac sequencer Pro 4. Once you manage to find the information you're looking for, it's usually clear and concise.

One truly exceptional feature is the ability to save sysex information with songs. Having all the necessary patches automatically dump into the synths and effects when you load a song really gets mixdown sessions up and running in a hurry.

CONCLUSION

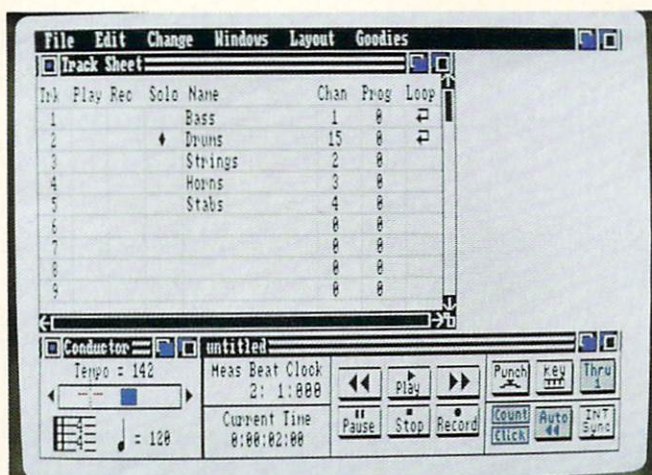
All in all, this is a quality product. I crashed it only once and was unable to reproduce it. Master Tracks Pro is easy to learn and reasonably fast to use. Timing is rock solid, and it has a wealth of event and song editing tools. It's fairly pricey, but if you sequence music for a living, it's certainly worth having. The implementation of some features is less than optimal but lean more toward the mildly annoying rather than the derangedly obtuse. Master

(continued on page 34)



Above: Bars&Pipes' Main Screen including the tape deck controls, toolbox, and sequencer.

Below: MasterTracks Pro's Main Screen including Track sheet, Conductor window, and tape deck controls.



musical cue at 131 bpm but it's 34 1/2 seconds long, not the 30 requested. Quick, what's the bpm to make it last 30 seconds? Relax, put away that calculator, call up the

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(continued from page 31)

Tracks Pro is especially useful to those who often take their work to other people's studios that use other computers for sequencing. After all, a familiar interface in a strange setting can feel like a fond letter from back home. In a busy studio setting, the Song Editor window with its speed and ease of use could make all the difference between getting a callback or getting your business card lost.

BAR&PIPES

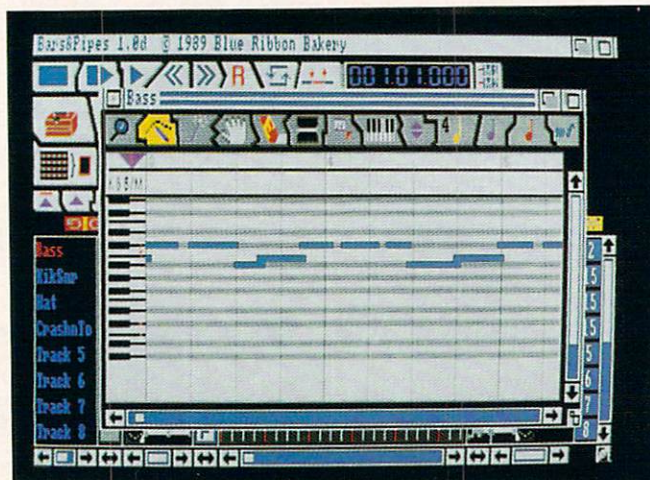
Bars&Pipes is the first musical offering from Blue Ribbon Bakery and an ambitious one indeed.

Bars&Pipes is an all-Amiga program; while Master Tracks Pro has an austere serious look, Bars&Pipes emotes the very soul of the Amiga and lets it all hang out graphically. It has a cheery eight color display in shades of red, white, blue, grey, green, black, yellow and purple. Instead of ordinary rectangles, the buttons are irregular polygons and the pointer looks like a saxophone. Frankly, it all looks a trifle demented, and personally I LOVE it! Making music should be fun, and Bars&Pipes looks like fun from the moment you boot it up.

Like Master Tracks Pro, Bars&Pipes uses the tape deck metaphor. It has an unlimited number of tracks and 192 ticks per quarter note resolution. Across the top of the main screen are the tape deck controls, the time counter and the loop, and punch mode buttons, each with its own bizarre shape.

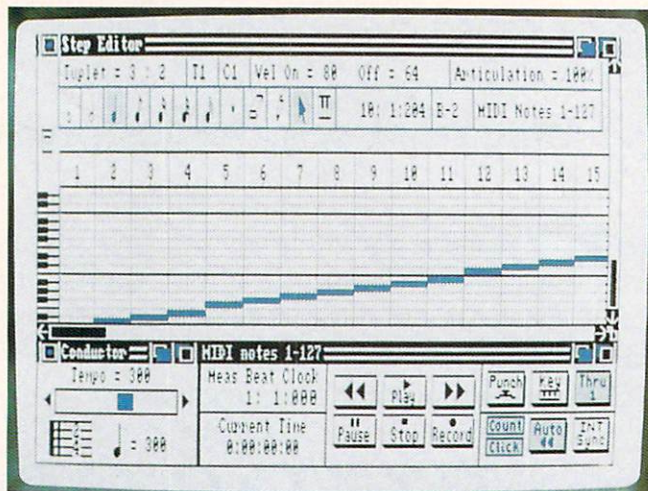
The left side of the screen has buttons for opening the toolbox (where you keep your hammer, saw, and wolverine, naturally), allowing for selection of the toolpad, metronome, group select, solo and mute, moving tracks in the sequencer display and the a-b-a song editor. Filling up the bottom half of the screen is the sequencer which shows from left to right the track names, input select, input pipeline, record status, sequence note window, the normal/mute/thru faucets (to pour MIDI data through of course), output

pipeline and MIDI output channel indicators. Across the top of the sequencer are the various position markers for editing, looping, and auto-locating. Across the bottom are the various scroll bars and horizontal sizing gadgets for adjusting the relative size of each part of the screen. Enthusiastic adjustments of these controls unfortunately led me on a trip to the Guru.



Above: Bars&Pipes' Editing Screen. Bars&Pipes allows non-destructive real time editing!

Below: Master Tracks Pro's Step Edit window including a palette of notes from whole to 1/64th plus dotted values.



You probably noticed a few items mentioned not normally found in a sequencer. Toolbox, toolpad, pipelines, faucets? Read on intrepid one, all will be made clear. The basic idea of Bars&Pipes

is the pipeline. You have pipelines directing MIDI information into the sequencer tracks and others directing MIDI data back out to your synths. Into these pipelines, you place pipetools that you select from the toolbox. The input pipelines use pipetools to alter the data on its way to the sequencer.

Pipetools in the output pipelines let you non-destructively edit the playback of your tracks in real time! Grasp the enormity of it – non-destructive real time editing! For instance, suppose you want to quantize a track. With a normal sequencer, you have to perform a destructive edit in non-real time, hit play, and listen. If you do not like the result, immediately hit undo to get the original track back and start over. With Bars&Pipes, you just drag a quantize tool into the pipeline, pop it open, and fiddle with the quantize controls until the playback sounds just right to you. You can have as many tools on as many tracks as your memory can support. By placing a quantize tool in each of four tracks containing kick, snare, hi-hat and bass, I was able to fine tune the performance of each part. I made the kick a little tighter, the snare a little looser, cleaned up my sloppy hi-hat playing and then adjusted the bass quantizing till it was grooving with the drums. Bingo!

Great rhythm track, no waiting. Instead of rerecording a part that's a little off rhythmically, it's a lot more fun to just wrench it around with some pipe tools till it sounds like what you meant to play in the first place. Good stuff.

Besides quantizing,

there are tools for articulating, echo, keyboard splitting, modulation, and phrase shaping to name just a few. With this innovative program, you can even combine any number of tools to create your

own custom MacroTools. One Macro-Tool that illustrates the power of this concept is the Triad which generates a three note chord from each note that enters it. Triad is simply two transpose tools lashed together. Imagine what a truly adventurous MacroTool might do. If you insist on doing destructive editing, the toolpad lets you apply any tool to any track or part of a track. You also can select up to 8 track groups to solo, mute or edit en masse. This is good for editing string or horn sections as well as the classic sequence plug ugly; the MIDI guitar part recorded onto 6 separate tracks.

After recording something into the sequencer, a tiny piano roll score appears in the sequence window. On playback, a vertical line slides across the screen showing what is presently being played, so finding notes that need editing is very simple. Double clicking on any track's sequence window pops up the sequence editor which has a host of display options: lyrics, chords, key and scale/mode, rhythm, dynamics, time signature, note velocity, pitch bend, mono after-touch, poly after-touch, control change, and program change. True to any Amiga lovers heart, all these options offer graphic editing.

Notes are displayed on a staff, piano roll or both. All this can get to be a bit much to scroll around in, so I generally start with just the piano roll and note velocity, adding to the display as needed. One very useful feature is the Auto Range function which automatically centers the track's notes in the display. Bars&Pipes supports the usual cut and paste operations as well as tools for getting down and dirty in the MIDI data. The magnifying glass opens a window showing MIDI data for any note it's over, but there isn't a MIDI event list.

There are tools for drawing in new data, lengthening and shortening notes, moving notes and erasing them. Selection can be individual or by drawing a box around an area to edit. The toolizer applies pipeline tools to edit regions. For step entry, there are pop up menus for note length, articulation, volume and tuplet values; this is a trifle slow. Instead of pop up menus, Bars&Pipes needs a note palette

which is always open and visible. Also there are no provisions to change note lengths from a MIDI keyboard during step entry, but it does have MIDI keyboard transport control and pitch entry. Clearly, traditional step entry is not Bars&Pipes best suit.

But Bars&Pipes gets really interesting in its very non-traditional step entry. Before entering a single note, you can specify song parameters like chords, key signature and rhythm which can constrain the note's pitch and timing. Then flail away in the edit window and all the notes you

draw are automatically in one key and on the beat. The Pipe tools also come into play with Accompany B; Bars&Pipes creates chords to match your selected chords and rhythm.

The Counterpoint tool generates a counter melody in your selected key and the Transpose tool shifts parts up or down while staying in key. If the key or chord you want to use isn't in Bars&Pipes extensive collection, you can create your own. There's a lot of versatility here for using Bars&Pipes as a performance instrument or an algorithmic composer.

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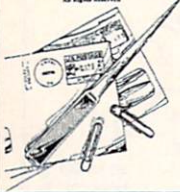
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There are some features in Bars&Pipe's Edit window that simply scream for improvement. Zoom in/out has no keyboard equivalent or icon so the pulldown really gets a workout. Also, you can't hear completed edit changes with the rest of the tracks immediately. You have to use the listen command which solos the edited track or close the edit window to hear it with the whole ensemble. To add to the confusion the Listen command (Amiga-L) in the edit window is also the keyboard equivalent for the Load command in the main screen. Oy vey! Also when selecting data the screen doesn't scroll when you reach the sides. This is true for the main sequence window as well. When I called up Blue Ribbon with these gripes, they cheerfully wrote them down and promised to fix them ASAP. After seeing the number of upgrades and bug fixes from versions 1.0 to 1.0d, I have a fair amount of confidence in their assurance. But if these problems will create problems for the way you work make sure and check the latest version before you buy. Caveat emptor.

For song construction, Bars&Pipes offers the a-b-a window. You specify song sections by length or measure numbers and then enter the order they should play in. While this isn't as versatile or intuitive as Master Tracks Pro's song editor, it does get the job done. One exception was when I tried to assemble a song with multiple time signatures; a-b-a got a little confused. Blue Ribbon says they are aware of the problem, and they plan to fix it real soon now.

Tracks can be in song time or real time. Real time tracks assign notes to SMPTE times using 24 fps, 25 fps, 30 fps or 30 fps drop. Tempo changes to songs can be set either from SMPTE times or song times and changes can be instant, linear, logarithmic or exponential. One nice touch is the Tempo Palette which lets you keep four tempos ready for instant recall. This comes in handy for recording fast leads with the tempo slowed down then selecting full tempo where suddenly it sounds as if Keith Emerson came and dubbed some blistering parts for you.

Bars&Pipes can save to MIDI File Format One and also print out a rough lead sheet of your song.

Bars&Pipes has a well-written manual; it is ring-bound, comes with its own stand, has a complete index and is friendly and informative. (Taking notes, Passport?)

CONCLUSION

Bars&Pipes is a diamond in the rough. While some parts of the program are irritatingly incomplete, others are so brilliant you can't help but sing hosannas. The real test of the pudding will be in the fixes and follow-ups. Since Bars&Pipes is a modular system, it has already attracted a core group of musician/programmers who are writing up pipetools to blow the mind, ears and other intrinsic areas of the musician's soul.

I love pipetools. Using my mediocre percussion and keyboard skills plus some pipetool magic, I recorded a song that earned my first radio placement. Perhaps I could have done as well with Master Tracks Pro, but then again you have never seen how silly I look with a pair of drum sticks in my hands. It's not a pretty sight.

Which one? Decisions, decisions....If you know what you want, you can play it fairly well and then want to fine tune and song arrange it, Master Tracks Pro will fit your bill admirably.

If you tend to fool around in the studio, love to experiment and are open to curious music experiences, Bars&Pipes will definitely reduce your need for coffee to keep you stimulated.

Whichever one you choose, you'll be choosing one of the two best sequencers on the Amiga. Which is Number One? Ummmmmmmm....

Products Mentioned

Bars&Pipes

Blue Ribbon Bakery, Inc.
1248 Clairmont Road,
Suite 3D
Atlanta, GA 30030
(404) 377-1514
Price: \$249.95
Inquiry #204

Master Tracks Pro

Passport Designs, Inc.
625 Miramontes Street
Half Moon Bay, CA 94019
(415) 726-0280
Price: \$395.00
Inquiry #211

Circle 111 on Reader Service card.

•AC•



Dr. T's

Keyboard Controlled Sequencer

review by Phil Saunders

Ed. Note: Dr. T's Music Software recently released a new version of Keyboard Controlled Sequencer (version 3.0). This current release features an improved user interface. We hope to have a full review of the new version very soon.

Dr. T's Keyboard Controlled Sequencer is a powerful, multi-layered MIDI sequencing program. Level II is an enhanced version of KCS which adds a variety of unique editing features and the ability to generate variations of existing sequences with only a few keystrokes. Level II is probably the most powerful MIDI sequencer available for the Amiga, but its power comes at a price: while it is easy to get started with KCS and Level II, it takes time to feel at ease with all the complex features of the program.

MIDI sequencers have traditionally belonged to one of two families: the "pattern" type (like Texture) or the "multi-track tape recorder" type like

Soundscape with the FastTracker interface. Each design has advantages and disadvantages. The pattern type can limit the user to short patterns and make it difficult to record parts running for the whole song. The tape recorder type can require a great deal of cutting and pasting to build short segments into longer songs.

KCS and Level II overcome these problems by offering three distinct operating modes: Track Mode, Song Mode, and Open Mode. The variety allows the user to choose the mode which feels most comfortable and best suits his style of music. KCS does not force you to "bend" your music in a certain way to fit the demands of the program. Indeed, the liberating style of Open Mode encourages experimentation and creativity by allowing you to make radical changes in arrangements with only a few keystrokes.

TRACK MODE

Track Mode is the traditional multi-track recorder approach used by other sequencers. The first track sets the length of the song and the other forty-seven tracks loop along with it. The tape recorder metaphor and controls make it easy to get started in this mode. All you have to do is hit record and start playing! Once the first track is finished, you record other tracks in sync with it.

KCS offers an interesting "loop mode" which allows you to keep recording track after track until you get one you like. Each newly recorded track can be automatically muted so you only hear the background tracks. The KCS manual suggests using this mode to record a number of "takes" of a solo, but I found it useful for ordinary recording. The looping allows you to keep recording a part until you are



satisfied without having to touch the computer keyboard. Once you have finally played the part correctly, it is easy to erase all the flawed tracks.

Track mode offers a variety of other options. You can use the punch in function in a similar way to record over a few mistakes in an otherwise suitable track. It is also easy to merge tracks. KCS can use muting options to control which tracks are merged, which allows a great deal of flexibility in assembling parts. KCS also has dedicated keys to "time shift" MIDI tracks. By moving parts forward or back by a couple of MIDI clocks, it is easy to change the feel of a song. In general, Track Mode provides a familiar way for new KCS users to get started with the program.

OPEN MODE

Open Mode is where the real power of KCS lies. Here the user works with sequences instead of tracks. KCS treats a sequence as a kind of subroutine which can be called from another sequence. By stringing several sequences together, complex musical textures can be assembled. The final "song" might consist of a control sequence which calls a drum sequence, a melody sequence, and a sequence with chord changes. Since the song can be modified by changing the control sequence, it is easy to change key or tempo and to modify the structure of the song. I like to start by assembling a drum part. I have a library of 1 bar drum patterns. I "program" a drum control sequence which assembles the 1 bar sequences into a longer progression. Now by calling this drum control sequence, I can treat my twelve one bar patterns as a unit. Since my master sequence can just call the drum control sequence, I don't have to worry about all the individual drum patterns.

The programming metaphor used in Open Mode is extremely powerful. If you are familiar with computer programming, it will seem quite natural. Essentially, sequences can call other sequences like subroutines. KCS Open Mode offers a variety of repeating and transposing options that make it easy to assemble short sequences into longer songs. For instance, a typical song might use an AABA form. In Open Mode, you simply have to record one sequence for the A section and one sequence for the B section. Then your control sequence can call the A section sequence twice, the B section sequence once, and then, the A section sequence again. Now your control sequence will play an entire chorus! It can be called in turn by a master sequence which controls how many choruses are in the song and might even modulate the key after the third chorus.

It is even possible to set a KCS sequence up to repeat indefinitely. This could be useful in a live performance situation, where you "vamp" (repeat a section)

until everyone has had a chance to solo. The Open Mode play screen allows you to start and stop sequences from the computer keyboard, treating KCS and your Amiga like a giant interactive instrument. KCS also offers a random

function which can be used to randomly choose from a variety of sequences. One use for this might be to record a variety of chordal accompaniments. KCS would choose which of the sequences to play each time through the song, adding variety to a stock arrangement. Some twentieth

century composers like John Cage and Stockhausen have written compositions where the performers randomly decide which notes to play. KCS's Open Mode makes it easy to explore these kinds of options in your music.

SONG MODE

Song Mode is a kind of mixture between Track Mode and Open Mode. It essentially allows you to arrange tracks or sequences in order to control how many times each repeats. It lacks the power of Open Mode control sequences, but is somewhat easier to use. All recording must be done in Track Mode or Open Mode: Song Mode is just used to stitch pre-recorded patterns into songs.

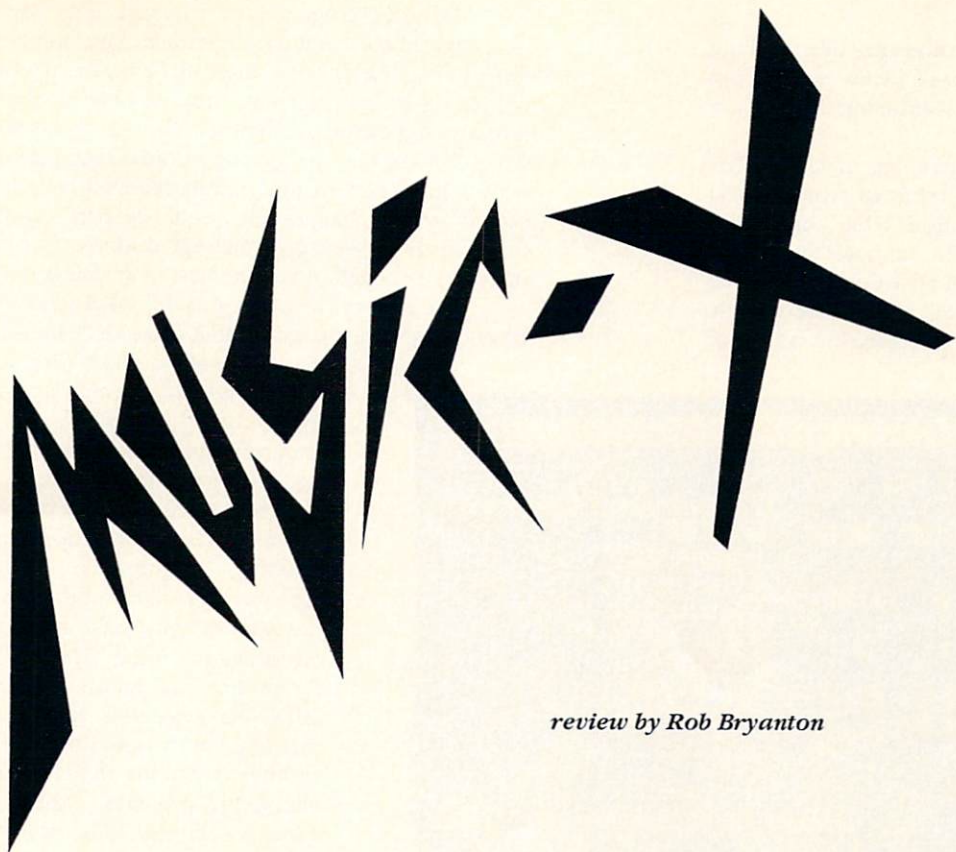
If the variety of modes sounds confusing, take heart: it's really not as bad as it seems. KCS provides a number of commands to switch sequences to tracks and vice versa. This allows you to choose which style of sequencing suits your temperament and material while still having access to powerful features if you need them. There is a lot to be said for this flexibility, but it does make the program more complex. In general, I like having the various modes available, but tend to stick with the Open Mode.

MIDI DATA

One important issue is how the sequencer presents MIDI data to the user. Some sequencers hide all the MIDI event lists, allowing the user to edit data using graphic images. Some allow the user to edit music notation. Others force you to become intimately acquainted with lists of MIDI notes. KCS falls squarely in the latter category. There is no simplified graphic or music notation interface integrated into KCS. You have to deal with every note in terms of its time, duration, velocity, and note value. At times, this requires the user to make confusing calculations about how many MIDI clocks are left in the measure.

(continued on page 44)

*There isn't
enough space to
describe all of
the KCS/Level II
editing
features,...*



review by Rob Bryanton

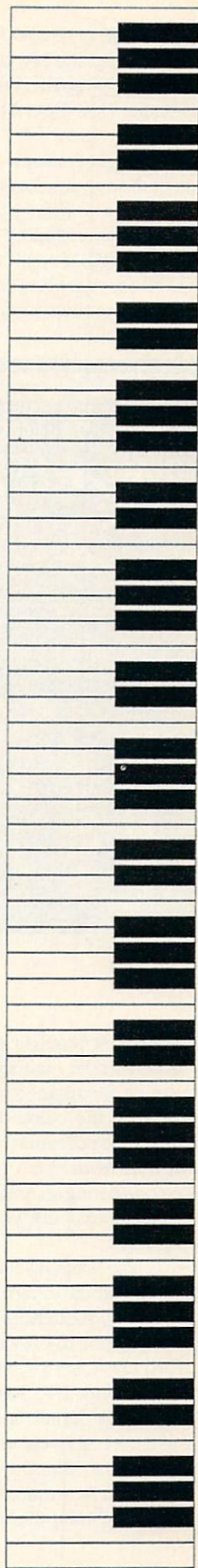
After almost two years of advance publicity, including massive amounts of full-color, full-page display ads in a number of the big music and computer magazines, Music-X has arrived. I have been using the program to drive a fairly large MIDI studio for several months now, and count myself as a satisfied customer. Inevitably, there are a few things I would like to see changed, but we will get to that list later.

Music-X is an integrated MIDI package, incorporating a versatile open-ended sequencer, both a graphic-oriented and event list-oriented MIDI editor, a generic editor/librarian (which requires only a configuration file to be used with the synth of your choice), an editor for shaping internal Amiga sounds recorded in either IFF or Sonix format, and MIDI filter and Keymap screens for the modification of incoming MIDI data. The program was written by Microillusion's David Joiner, author of *Discovery* (one of the Amiga's first and most successful educational packages) and the popular graphic adventure game, *Faery Tale Adventure*.

The program's long development time is reflected in the size and admirable organization of its manual: at almost 500 pages, it includes a table of contents, index, glossary, several appendices, and a handy

thumb index for quick location of sections. This manual really babies newcomers to the Amiga along, including sections on such topics as how to open a disk icon and the use of file requesters. The structure of the manual closely follows the structure of the program, with chapters relating to screens and sub-headings referring to topics like menu names and their available menu selection choices. This makes it much easier to poke around the program, checking with the manual only when you run into trouble.

Double-clicking on the program icon for Music-X brings the program up in its most basic configuration (Figure One). The program then loads modules for many of its special features only as you call for them. This is a nice approach, because it cuts down on the initial boot time and means the program's memory requirements more accurately reflect current user demands. Also, this should make it easy for users to add additional modules as they become available, using the included "install modules" program. And here is the big bonus: after the initial disk access, modules remain in memory for instant availability for the rest of your session (available memory permitting).



"STATE OF THE ART?"

One of the big claims Microillusions has been making about this program is that it is a "state of the art" sequencing package. How does Music-X succeed at hitting this moving target?

For professional use, this program has much to offer. Music-X supports the Standard Midi File format, which should allow easy transfer of data to and from other companies' sequencers, including those on other computer systems. It supports MIDI Song Pointer and MIDI Time Code. There is an option for "absolute" tracks which will trigger time-specific events (like the sound effect for an on-screen car crash, for

Within the program itself, a number of activities can be instigated as a sequence is running, including saving files to disk. The ability to manipulate data as a sequence is running is one capability we see only on the more recently introduced sequencers. On the Music-X editor screens, notes may be removed from a sequence during play, or their MIDI channel may be changed, but any other activity which changes the sequence data causes the program to stop playing. In this regard, Music-X is not quite up to the standards set by the best of its competitors.

The program includes a useful MIDI filter section. From this screen, incoming MIDI data can be transformed into either some other kind of MIDI data, or a Music-X control command (more on these later), or clock commands to the sequencer. For live use, this allows all sorts of fancy tricks. Strangely, there is no way provided to use these remapping capabilities on existing sequences, short of reconnecting your computer's MIDI out to its MIDI in (make sure you turn the program's MIDI THRU off first!). For professional setups with external MIDI patchers, this is not a big problem, but it would be nice to see another way to use this module from within the program. Other leading edge sequencers offer many more ways to creatively massage sequence data, including humanizing functions, conforming of one track's rhythmic structure to another, and algorithmic composition modules for generation of new music. Matt Nathan, the author of the Music-X manual, tells me modules such as these are planned for an upcoming "Extras" disk.

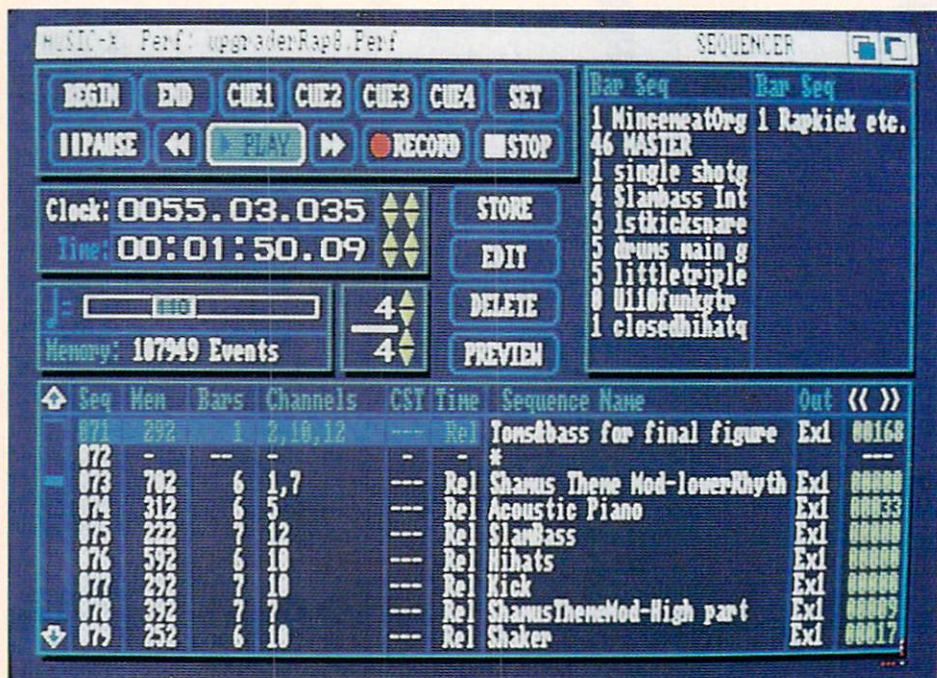


Figure One: Music-X's basic Sequencer screen.

instance) at a specific moment regardless of the current tempo chosen for the sequencer. Meanwhile, "relative" tracks can be running simultaneously, independently triggering musical events at the currently programmed tempo. These are the kinds of features that should make Music-X very interesting to the numerous video professionals who already own or might be considering an Amiga (by the way, some Amiga owners will appreciate a utility which allows the import of SMUS files into Music-X).

The program usually multitasks politely as long as those of you without a hard drive use Music-X as your system disk. It will play sequences flawlessly as it runs in the background, allowing you to provide your own background music as your word processor prints out lyrics, you paint a picture, or files are saved to disk. And an option is included to temporarily suspend program operation, if another program needs the serial port. Although Amiga owners might be more blasé about capabilities like these, a solid dependable multi-tasking sequencer is certainly a "state-of-the-art" achievement in the rest of the computer music world.

GRAPHIC AND EVENT LIST EDITING

Music-X gives you two ways of looking at MIDI data in each sequence: the graphic piano-roll style "bar editor" (Figure Two), and the text listing-oriented "event editor". You may jump freely from one to the other as you edit your music, and the currently highlighted event remains that way as you jump back and forth.

On the "bar editor" screen, you can choose to view or not to view any type of MIDI event within the track. This is handy, since a dense track viewed with the zoom out and all midi event types selected for viewing can take several seconds to redraw. Each MIDI channel has its own associated color (from a palette of six), and each type of event has its own shape for easy recognition. Events may be marked for editing either individually or in groups. Unfortunately, there are no provisions for drawing a curve to redefine controller events like pitch bend or aftertouch. If you want to actually change the shape described by these kinds of events, you must do so one event at a time. The graphic setup makes it very easy to select ranges of notes for editing, but selecting by beat (all notes on or near beat three of each measure) must be done one measure at a

time. On the other hand, you are provided with some nicely designed modules for scaling aftertouch or velocity data over the entire track, or a marked portion thereof.

On the edit screens, the "HELP" key acts as a sixteen-step-deep undo for removed events. Either screen can be used in a step-time entry mode, if that is your preferred method of composition. Real time recording is also possible from these screens. When playing back this data, you may choose to listen to the current sequence only, or to the entire arrangement to see how your edits work in context. Be sure to set the starting bar from the play parameters window when using the latter option. Otherwise, you can end up hearing a problem, fixing it, then pushing play, only to have the music jump to an unrelated section chosen by this parameter.

In the editor screens, all time-related editing functions can be affected by the currently selected "grid". There is a "set grid sizes" window from which you set the minimum note value and duration value. For instance, you might choose quarter notes for your grid and a sixteenth note for the duration of those notes. With "snap" turned on, a block of loosely played notes can then be picked up, moved to another section, and pasted down with their relationship to the beat intact... very nice. There are six different types of quantizing available, with threshold and percentage values under user control. It may take some time getting used to the two-stage method of setting up quantize values, however. First you set your note and duration values in the "grid" window, close the grid window, then open the quantize window to choose your quantization type. Once you are in this window, you cannot change your mind about the note values you are quantizing to... other than by closing this window, reopening the "grid" window, selecting new values, closing the window, reopening the... well, you get the idea.

OPEN-ENDED POWER

As a sequencer, Music-X is extremely versatile. It can hold up to 250 sequences, with any 20 of those playing at any one time. Sequences can be any length (up to 4096 measures), and that length can be changed at any time. Sequences can hold either MIDI data (from any number of MIDI channels), Music-X control codes (for triggering other sequences), or tempo control codes—or any combination of these. Sequences can be merged in any combination, and unmerged by MIDI channel, Music-X events, or system exclusive messages. Output can be directed either to the Amiga's internal voices or to MIDI out. Microillusions offers a MIDI interface, "MIDI-X", which features six MIDI outputs.

The sequencer controls are tape recorder style, with four storable cue points for jumping to song sections, plus two additional registers for automatic punch-in and punch-out.

There are two clocks on screen. One keeps track of your position in measures, beats and clock pulses (resolution is a respectable 192 pulses per quarter note). The other is a real time clock, which can be very handy if you have a total running time in mind for the piece you are creating. This clock will jump to the correct elapsed time, even if you start in the middle of your song!

Music-X control codes—that is, events which trigger, mute or otherwise affect other sequences—may be nested. For instance, you could have a number of individual tracks of, say, hi-hat, snare, and kick drum parts, being called by other tracks of "play sequence" events to construct the drum part for each song section, with those in turn being called by a master song sequence of more "play sequence" events. If we were to look at this final sequence in the aforementioned bar editor, we would see a series of horizontal bars representing these "play sequence" events (Figure Three). Each would be labelled with the name of the sequence it is calling, with its length representing the duration of time that sequence would be played for. Arranging and rearranging a song's parts becomes easy and intuitive. Changing the "feel" of a part can be as simple as picking its bar up and moving

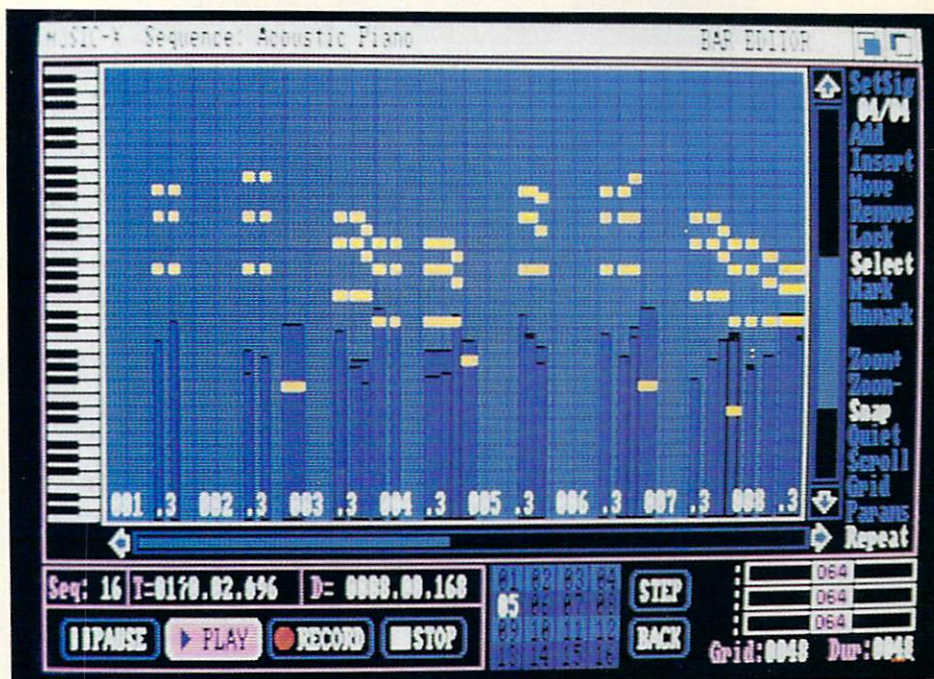


Figure Two: The graphic, piano-roll style Bar Editor.

it slightly forward or backward in time. Duration, location and transposition of notes and parts are easily modified with the mouse. And suppose you love everything, but it would have been nice to hear one more

cymbal crash at the start of bar 27? No problem, you can add it right here as a single MIDI note to the appropriate drum machine's channel. This unconfined work environment is one of Music-X's most notable features.

If you desire, the values for all adjustable parameters from the program's numerous screens may be saved as part of your master "performance". Using this

feature, it's possible to completely reconfigure the sequencer with each song loaded in. From the editor screens, you have the option of saving and loading individual sequences, which allows you to build a song using previously recorded sections. To get you started, a small library of various drum patterns is included on the Examples disk.

OTHER GOODIES

Music-X's other big claim to fame is its user-



Figure Three: The master play sequence shown in the Bar Editor.

configurable editor/librarian section. This is a strong and innovative idea. Anyone with a knowledge of the MIDI protocols for their synthesizer will be able to design a librarian for mass storage of its voices. In addition, a piece of software currently under development called "The Patch Editor Construction Kit" will allow users to develop Editors for their favorite MIDI synth. In reality, not all MIDI musicians may be interested in wading this deeply into the bit-stream, so this future capability may or may not prove useful to you. Where things will get really interesting is when public domain configuration files start to become available from end-users. Hopefully, Microillusions will be able to act as a central gathering point for these files, to making sure they are distributed as widely as possible. For persons with a large amount of gear, Music-X could some day become the single most cost-effective piece of software they own, saving hundreds of dollars in editor/librarian packages for each synth they are using.

Included with the program are protocols for the Casio CZ-1000, Oberheim Matrix-6, Roland D-50 and Mt-32, and Yamaha DX7, DX100, and TX81Z. This is the basic data you will need to communicate with these synthesizers. The Examples disk includes actual voice librarian files for the CZ-1000, D-50, DX7, and DX100. To show what the Patch Editor Construction Kit should allow you to do, Editor programs are included for the D-50 (Figure Four), TX-81Z, and DX-100.

GRIPES AND WISHES

Most (but unfortunately not all) mouse commands are duplicated with keyboard shortcuts – most often the letter starting the command. In many cases, it appears that it is the most potentially destructive commands which do not provide keyboard shortcuts... things like "Erase All Sequences", for instance. Personally, I would rather be given the benefit of the doubt and have all commands available from the keyboard. It's been said before, but I'll say it again... the mouse is great, but being able to touch type a series of commands in is always going to be faster for the experienced user.

If you are using the "select" command to edit between several sequences from within the bar editor, the program does not remember individual viewing parameters for each sequence, which can leave you having to reset zoom value and cursor position values each time you go back and forth. Of course, this is less of a problem if your sequences are all of the same length, and with the same starting location, but that is not always the case. A word of warning: if you are going to edit a different sequence without exiting back to the main window, be sure to "store" your changes prior to selecting the new sequence. This is one of the few places, I found within the program, where it would wantonly discard edits without first asking your permission to do so – the only other time this occurred was if you attempt to save a file with the same name as one already on the disk; the program assumes you are in your right mind and does so without a "file exists, replace?" type of requester.

As mentioned before, the program asks floppy disk system users to boot from the Music-X program disk, which

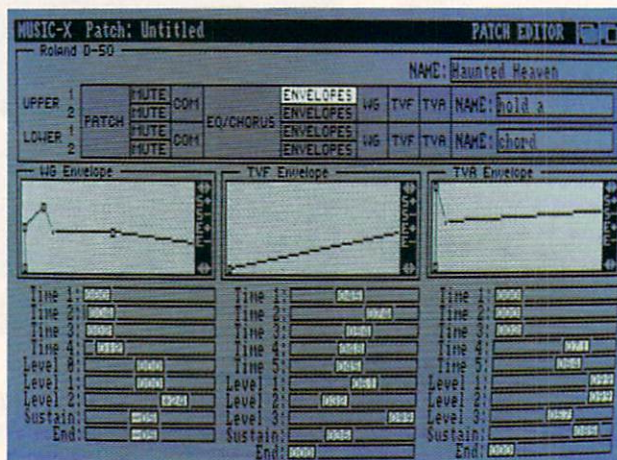


Figure Four: Patch Editor for the D-50.

includes a modified version of Workbench 1.3. Unfortunately, the stripped down 'C' directory they provide you with may not contain all of the commands you are looking for. The clipboard.device is not included in the devs directory, which caused problems such as Scribble! losing its editing functions, and the Notepad entirely refusing to start. Copying this device over from a Workbench disk solves these problems, but most

likely there are other similar pitfalls waiting to be found by would-be multitaskers. Why can't all Amiga programs claiming to be multi-tasking be designed to accept a generic Workbench 1.3 as their system disk? This would make life much simpler.

The original releases of this program had a problem with errors when recording very dense data streams. For instance, note data merged with midi time code. I have just received a beta copy of version 1.04 of the program, which significantly reduces this problem. For many users, this bug might not have been noticeable, but for those encountering these difficulties, contact Microillusions to request this update.

I have a suggestion for an add-on module some enterprising programmer out there might want to attempt. One very useful feature of the bar editor screen is the ability to remove or insert chunks of time, to move the data following this operation back and forth in time. An additional editing feature I find myself wishing for would allow the user to mark a part of the performance, which could then be scaled larger or smaller, while maintaining the proportional relationships of the notes within the space being edited. This idea could be continued into a number of processes already familiar to paint program users: for instance, squashing a copied bass part's top and bottom down until it was all played on a single note would give you a quick way to create a nicely synchronized kick drum part. Completely flipping a part end for end or upside down around a chosen pivot tone could help to stimulate those creative juices. And while we're making suggestions, I would also like to see the quantize module expanded to include variable swing features... essentially by allowing the user to distort the quantizing grid over the space of a bar. This would be the MIDI equivalent of remapping an image to a corrugated surface, if you catch my drift.

By the way, a future revision of Music-X is planned to have the added feature of independently running tempo tracks for individual sequences. Many of the timing tricks mentioned in the paragraph above could be achieved using this feature. Hopefully we won't have to wait another two years to see any major revisions for this program!

THE VERDICT

Music-X is an innovative, highly integrated MIDI package. Though lagging behind the competition when it comes to some types of automated editing capabilities, and completely lacking any traditional notation capabilities, its open-ended flexible approach makes it very easy to get up and running on quickly, with plenty of room to grow as you take advantage of its many features. Though not bug-free, I have found the program to be quite dependable after five months of daily full-time use. The graphic

representations of data within the Bar Editor make moving large sections of music or finding small mistakes a breeze – this is my favorite part of the program. Also, the ability to save a song's sequence data accompanied by a complete system setup, including editable patch data for each synth, keyboard remapping, output rechannelizing, and even Amiga voice sample data, all as a single "performance" file is a potentially useful touch for those wanting to get things organized. Features like these reflect the care that has gone into the design of this program. Amiga MIDIphiles, check out MUSIC-X!

Music-X

Microillusions

Price: \$299.95

Editor's note: shortly before we went to press we received the information that Microillusions has, apparently, gone out of business. It was our decision to go ahead and run this review because the program is still available on most dealers' shelves and also in the hope that some enterprising company will pick up and continue distribution of the fine Microillusions products.

About the author: Rob Bryanton lives in Regina, Saskatchewan, Canada, where he composes regularly for the 'Canadianized' version of Sesame Street. He has also produced soundtracks for numerous films, television shows, and jingles. He is currently using his Amiga to produce music scores for the Saturday morning children's series, "Puttnam's Prairie Emporium", seen across Canada on the CTV television network.

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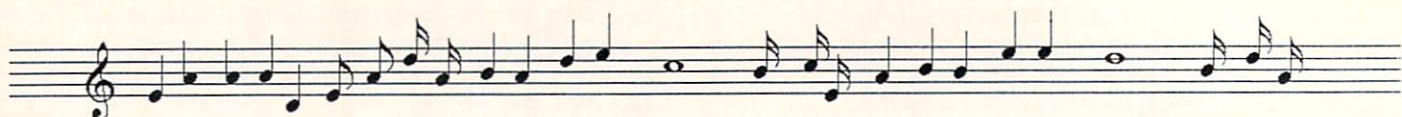
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(continued from page 38)

(KCS does include a simple calculator to perform these computations).

There is a good and a bad side to this. While graphic interfaces make it easy to work with MIDI data, they add a level of abstraction that can limit the sequencer's power. While KCS and Level II do not have graphic bells and whistles, they have all the editing power anyone is likely to need. Cut and Paste editing is used extensively. Each operation has a series of options, all presented clearly in a requester.

For instance, in pasting one can replace the old data with the paste buffer, merge the two sections, insert the new data, or extend the sequence's length. KCS has a wide variety of transposition and quantization options. It is extremely easy to change a sequence's MIDI channel or

transpose its key. In general each KCS command can work in several different ways. The result is the ability to edit your music with great precision.

EDITING

There isn't enough space to describe all of the KCS/Level II editing features, so I will mention just a few of the most powerful ones. With Level II, it is possible to quantize one sequence in terms of another. This is great for adding a swing feel to a drum part. The editing features of Level II make it easy to set up Macros to add feel to a sequence. Want accents on the first and third beats of every measure? No problem. There are several ways to accomplish it. You can also use beat position to modify note intervals, velocity, duration, channel assignment, or any other parameter you could want to modify.

The note editing features on KCS are more powerful than those on any other sequencer available for the Amiga. More powerful does not mean easiest to use, but KCS usually offers several ways to accomplish an editing task. It can do pretty much any type of editing you are likely to need.

Other interesting features include the ability to record system exclusive information, a drum channel that is protected from the effects of key changes, merging and echoing of MIDI input (useful when dealing with synthesizers that only output on one channel), and the use of "MIDI keys" to control common sequencer functions. "MIDI keys" let you use a MIDI footswitch to start and stop recording of sequences. Another unique feature is KCS's "live edit" mode, which allows you to modify pre-recorded sequences as they are playing. Live edit is useful for erasing a few bad notes in an otherwise perfect sequence or for editing controller values like pitch bends. It offers an interesting "mix" mode which mixes the old controller data with the current position of the MIDI pedal. KCS can also filter out various kinds of MIDI

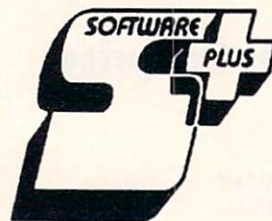
data and split sequences based on note values or MIDI channels.

PVG

One unique aspect of the Level II sequencer is its ability to generate modified versions of user sequences. The "Programmable Variations Generator" is an extremely powerful composing and editing tool that has no real counterpart on other sequencers. The PVG allows the user to create Macros which can randomly or deterministically modify a sequence. A Macro might edit a sequence by changing all the C sharps to C naturals, changing the sequence's mode. Another might randomly alter the velocity of certain notes to add a little variety to a "dead" sequence. Other Macros can be set up to randomly transform the notes of an input sequence into a new melody. I tend to use the PVG mostly as an editing device, to add variety to a repetitive sequence. Its real value is in helping the user to make new creative discoveries that have musical applications. The PVG allows the user precise control over what kinds of changes are being made; but the random elements can also be used to generate unpredictable music if desired.

USER INTERFACE

A sore spot is the user interface. Neither KCS nor Level II are "sexy" in the manner of MUSIC-X. Both are direct ports from the Atari ST and replicate its user interface exactly. Even the manual is written for the ST! KCS does not make use of pull down menus or other intuition goodies. Instead the program uses on-screen gadgets to select editing commands. Perhaps the best description of the KCS user interface is "functional." The program does what it needs to do in a straightforward manner. Even so, there are times when I feel the program has grown without enough thought about how its parts fit together. KCS is not as smoothly integrated as a sequencer like MUSIC-X. Dr T's reports that they are upgrading KCS to version 1.7 in the



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near future, which will add support for menus and a variety of other improvements.

That said, KCS is fairly well adapted to the Amiga. It multitasks quite happily on its own screen. I regularly run KCS, two Dr. T's patch editors, and the rest of my system without any problems. KCS version 1.6a and Level II support the Amiga's internal voices in an interesting manner. Although use of the internal voices is poorly documented, it appears that any Amiga IFF sample can be assigned to any note, to any MIDI channel, and to any MIDI velocity range. This means that playing a soft note can trigger a different sample than playing a hard note. This intelligent arrangement allows more flexibility in using the Amiga's sounds. The quality of the internal voices is still limited, but KCS makes them sound good. The voice assignment also makes it easy to build drum kits. KCS allows the user to select a new CLI or use the Workbench without quitting the program. The colors used on screen can also be modified and saved with a music file. The program is also quite bug free; whenever I had problems, they usually turned out to be caused by incorrect settings in the "Set Options" page.

THE MANUAL

The manual was written for the Atari ST; Amiga documentation consists of a three page supplement and a series of "Read Me" files on the program disk. For the most part, one can merely substitute "Amiga" for "Atari" and the manual will work. However, there are a few key combinations which are different, and I found myself constantly referring to the documentation to find out what Amiga key corresponded to "Shift/Home". The manual itself is printed on five by eight paper and comes in a vinyl binder. It explains most of the features adequately, but I often found myself rereading sections to try to understand subtle points. Level II has a separate manual which fits in the KCS binder. The manual does feature a good index which is essential for a program of

this sort. I am told that a new manual has been prepared which includes more application notes and tutorials. It will be included in the next upgrade.

FLIES IN THE OINTMENT?

KCS does have some significant flaws. While it can MIDI sync to an external source, including support for Song Position Pointer, KCS does not support MIDI time code or SMPTE synchronization. This is a fairly significant omission for a computer like the Amiga that is so heavily identified with video. (It is worth noting that both MUSIC-X and Passport's Master Tracks Pro support MTC and SMPTE). This is probably a legacy of KCS's Atari ST origins. Dr. T makes a package called Phantom SMPTE that hooks onto the Atari ST KCS; they are rumored to be developing a version for the Amiga.

In addition, while KCS does support standard MIDI files, it does not support SMUS files. The SMUS/IFF standard is used by programs like Deluxe Music Construction Set and SONIX. It seems strange that Dr. T did not provide an utility program that allowed the user to import SMUS scores. When I asked them about this omission, they stated that they felt MIDI files were the standard and that is what they wanted to support. Interestingly, their Copyist music notation program does import SMUS scores. There is also a public domain utility and at least one commercial product that will do the file translation.

A further note is Dr. T's obnoxious copy protection scheme. KCS and Level II each use a key disk protection system. The disks can be copied, but the master disk must be inserted before the program will run. No unprotected version is available (although a backup disk is offered for \$15). Copy protection is a real pain in a productivity program like a sequencer. Running my standard MIDI setup (KCS Level II, DX-Heaven, and MT-32 Edit) requires inserting five disks in my floppy system. Even with a hard drive, three floppies would be required! In addition, if you select cancel instead of inserting the proper disk (or

insert a copy with the same name as the master disk) the system crashes! This is not acceptable in a multi-tasking system.

SOME FINAL "NOTES"

So is KCS for you? The bottom line depends on what you want to do with your music and how you want to do it. KCS, particularly in its Open Mode, supports an analytic approach to music. If you are the kind of person who likes to ponder the form of the fugue or experiment with different musical structures, KCS (and especially the Level II version) would be a good choice. Similarly, if you demand maximum control over your music, KCS provides the editing features you will need. If your demands are more modest or you are more interested in making music than in learning a sequencer program, KCS might not be the best choice. While the Track Mode does provide a fairly easy learning environment, KCS as a whole has a steep learning curve. Its considerable power is buried in a somewhat clumsy user interface. Still, KCS and Level II have a number of unique features that other Amiga sequencers lack. If you can adjust to its idiosyncrasies, you will find KCS to be a very good tool for making music.

KCS and Level II version 1.7 should be available shortly. They feature pull down menus, an improved tape recorder style interface, integral support for MIDI files version 0 and 1, and an improved manual. The upgrade will be available for \$40 from Dr. T's.

Useful articles about KCS can be found in Keyboard's June 1989 issue ("Keyboard Clinic #19") and Electronic Musician's September 1988 issue ("Dr. T's KCS Made Easy").

•AC•

Dr. T's Music Software
220 Boylston St. #206
Chestnut Hill, Ma. 02167
(617)-244-6954

Keyboard Controlled Sequencer:
\$249
Level II: \$349
Upgrade from KCS to Level II:
\$100
Inquiry #216

C-ZAR...

Diemer Development's Editor/Librarian

by Dr. R. Shamms Mortier

Casio synthesizers are in place in many MIDI music studios. The higher end ones are as capable and offer as many options as any other brand name, and the lower end models allow novice electronic musicians a way of getting into the learning curve at a minimal expenditure. I began my MIDI work with a low cost Casio synth, a Casio 1000 (about \$250.00 four years ago). You can program even the low end Casios to your heart's desire, augmenting the on-board sounds with your own variations. Like many other synthesizers, you can then store your new voices on a plug-in cartridge for later use. This manipulation, however, is not that "user friendly", and can be very time consuming. If you have an Amiga and a Casio (either a CZ-100/1000 or a CZ-1), you can purchase C-ZAR from Diemer Development to make this manipulation and creation of new Casio voices a pleasure instead of a problem.

You will need a MIDI interface box with any synth you hope to run with your Amiga. The manual to C-ZAR comes in a large three ring binder and contains eighty-eight clearly typed pages. The manual doesn't have any graphics or screen dumps, but the writing is clear enough so that they're not really needed. Getting around in C-ZAR is so easy that you probably won't need the manual after one good study session. The version of the software that I been using is 2.0., but there

has been a recent upgrade in January of 1990 that has made it even better, fixing some bugs and making it better at multi-tasking. All of you synth owners that have a CZ-1 (a more extensive/expensive synth than the CZ-1000) will be glad to know that this software offers you all sorts of extra goodies that the poor CZ-1000 owners can not access. What is contained here for the CZ-1000 (and CZ-100) owner still makes it well worth your while to invest in this software. There are two screens in C-ZAR, the Librarian and the Editor.

Without any manipulation at all, C-ZAR pops up on screen with a wealth of

sounds ready to be dumped into a Casio synth. The sounds on a Casio synth are contained in what is called a "bank", and each bank holds sixteen separate sounds. There is a bank of

presets and a bank of "internals". In addition, there is the capacity to load RAM and ROM cartridges that give the user access to many more banks. Each of the sounds in a bank can be manipulated by the controls on the synth, so that the real number of sounds is infinite. Once discovered, sounds can be saved to cartridge or to internal memory. This process is quite creative, but the controls on the Casio synth are less than user-friendly to master, and the trial-and-error process can consume much of your creative energy.

THE LIBRARY

After booting up the unprotected C-ZAR software, you are deposited in the "Library" environment. Spread out before you are the thirty banks of sounds that are resident on the C-ZAR disk. You can choose any ten of these banks (that's 10x16 sounds, for a total of 160) to remain resident in memory at any one time. When you click on a bank, its contents (sixteen separate sounds) appear ready for the CZ-1000 to choose and play. Sounds can be copied from one position, and even from a different bank, to another. They can also be deleted, merged, and saved. One of the nicest features here is the ability to trigger the "record mode", which allows you to play a short passage (up to 256 separate MIDI events). Each time you select another sound, the recording will play back using this recorded track. This procedure can also be looped, so that it is even possible to use this as a pre-recorded section that can be over-dubbed (quite handy in a live playing situation). In the library section, you can save the internal sixteen reconfigured banks to the synth, so that these new sounds will be present when you power up your Casio. The recorded passage can also be looped for continuous play, shutting off when either mouse button is pressed.

Unless you select "quiet mode", every time you select a new bank to access your Amiga will play a short representation of every sound in that bank, a feature I really appreciate. It lets me preview all of the sounds so that I can tell if I want to experiment with that bank any further. By selecting "MIDI On", the sounds will only play back through the amplified synth. Sounds can also be named and renamed, and the ADSR (Attack, Decay, Sustain, Release) envelope of one sound can be

Spread out before you are the thirty banks of sounds that are resident on the C-ZAR disk. You can choose any ten of these banks (that's 10x16 sounds, for a total of 160) to remain resident in memory at any one time.

...to the rescue!

superimposed upon another which is similar to the modifications possible from some of the best Amiga sound sampling software. By opening a "tone-mix" window, two monophonic sounds can be played at once. Tones can come from either the Internal or Preset sounds of the Casio.

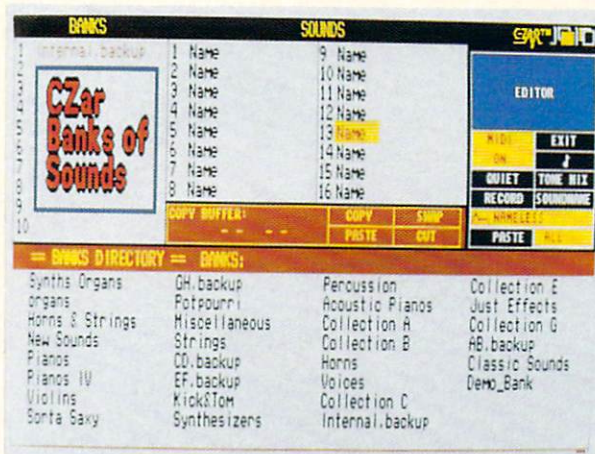
There are three pull-down menus at the top of the Library screen: CREATE BANK, SAVE, and MISCELLANEOUS. CREATE BANK has several choices. A whole bank of blank sounds is open for experimentation. A bank of sixteen copies of the same sound, or a bank of sounds loaded in from a cartridge, can be alternately addressed along with a bank loaded in from the Presets. SAVE/SAVE AS allows you to save over the existing bank choice. Banks can be saved to disk or RAM cartridge. The third menu allows you to rename and delete banks, change directories, and release a bank so that new ones can be loaded, and LOOP the lines that you previously recorded.

THE EDIT SCREEN-

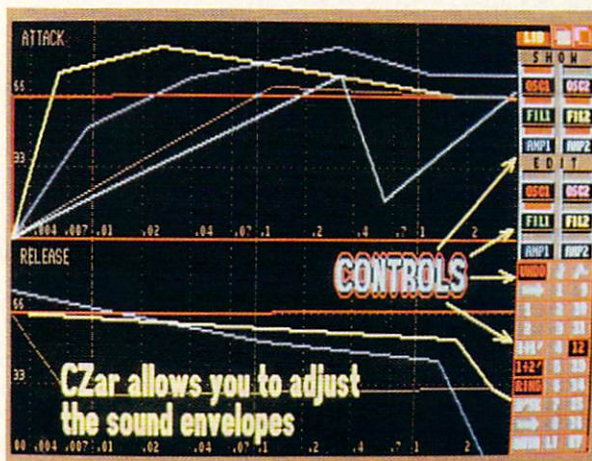
This is a very graphically designed workplace. On the right side is the Main Control Panel, while the balance of the screen is split vertically in half to contain the ATTACK waveforms on the top, and the RELEASE display on the bottom. The Main Control Panel presents us with all six of the waveform possibilities: two oscillators for pitch, two filters for timbre, and two amplifiers for volume. We can see some or all of these with the SHOW buttons, or can edit them one by one. A merciful UNDO is also included.

We can also scroll across the entire 1024 x 200 display. We might also want to play around with either RING or NOISE modulation here.

Below: Here are examples of the Instrumental Sounds that can be exported to the Casio Synthesizer.



Below: Any of the instrumental sounds within the Sound Banks can be manipulated in several directions according to your needs.



Three additional windows are resident and available. The first allows us a finer control over waveform manipulation then the mouse, and is called the DATA window. The second is the LINE window. It allows for the linking together of waveforms, and with it we can DETUNE

lines in various ways — by octave, note, and finer increments. Lines can also be copied or exchanged. The most intricate is the EFFECTS window, where an even larger array of options is possible: Vibrato, Velocity, Pitch Bend Range, Key Transpose, and Portamento settings. The balance of the display centers upon the manipulation, either by the mouse or by menu, of the ATTACK and RELEASE sections of the waveforms. Two Oscillators alter the pitches, two Filters alter the timbres, and two Amplifiers vary the volume. Pitch envelopes, Tone, and Amplitude envelopes appear in dedicated colors.

If you are an Amiga/MIDI musician existing on a limited budget, and either now own a CZ-100/1000 or a CZ-1 or are planning to purchase one, consider the C-ZAR software as a needed addition to your studio. With it, you can create and manipulate the soundbanks to your ear's content.

•AC•

C-ZAR
Diemer Development
12814 Landale St.
Studio City, CA 91604
(818) 762-0804
Price: \$195.00
Inquiry # 210

Snapshot

by R. Bradley Andrews

IT CAME FROM THE DESERT

A large number of "giant bug" films were made during the '50s and '60s. Most were made in black and white, with low budgets and predictable scripts. But regardless of these limitations, they were the staple diet of a large number of teenagers during this period. While no longer as popular, these movies hold a special place in the hearts of people everywhere.

Thus, it is not surprising that Cinemaware has targeted their latest

people around town to find out different areas where the ants have been sighted. During this section, you must gather four different types of evidence; a plaster cast of a creature's tracks, a recording of the creature's sounds, a vial of the creature's fluids, and an actual part of the creature.

Only when all the evidence has been found will the mayor admit to the existence of the creatures and activate the national guard, sending you back to destroy the source of the ant's strength, the queen ant. Construction workers can also be enlisted

frustrating when you cannot do what you would like to try. I suppose it is better to know the limits than to have to guess them.

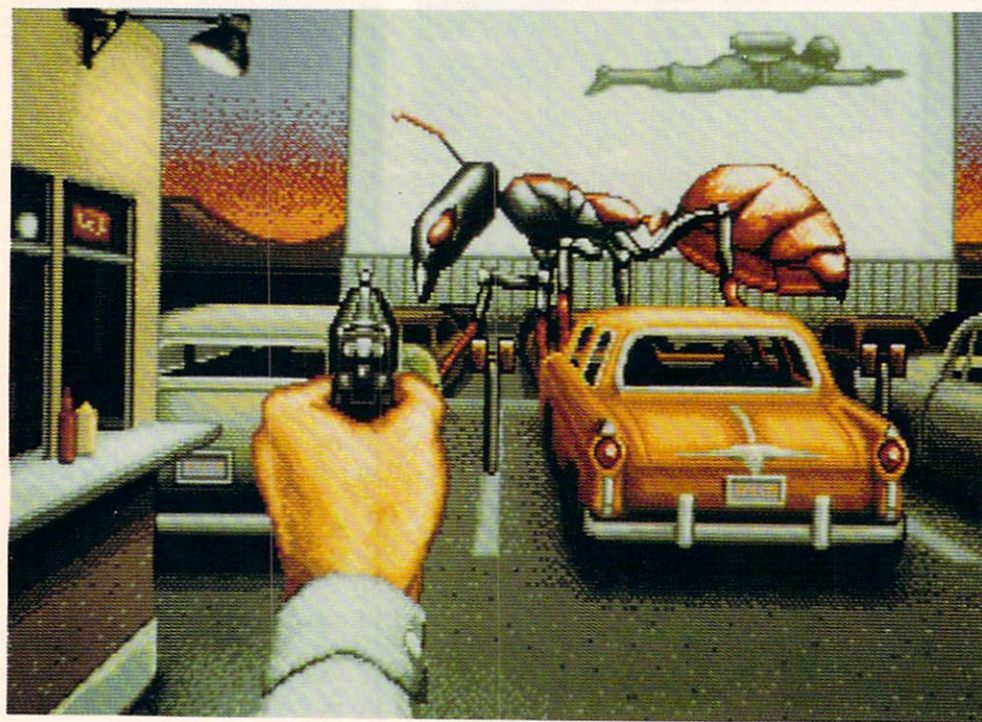
Each second of playing time corresponds to several minutes of game time. Thus a short talk with the police chief can eat up a large chunk of your day. Since most areas are only open during the day, this can be very frustrating and often results in many trips to the house for long naps to pass the time. Travel between different areas in the town also takes time, further limiting your productive day. Using the telephone can help you avoid some of this travel time, but there is often no substitute for being there in person.

The graphics in *It Came From The Desert* are up to the usual standards of Cinemaware releases. Each full screen view is very detailed and has mini animations, such as a winking eye or turning head, to make it attractive to the eye. But very few of these scenes are scrollable and move during play. The animated sequences, many of which do include screen scrolling, are much less elaborate, but are still pleasing to the eye.

The game does have two major flaws. As with most of Cinemaware's releases, the game is basically just a series of interconnected arcade sequences. Mastering these can be a bit of a pain and once you figure them out, the challenge is gone.

Secondly, the player has very little idea what is going on. Where to go is often just a guess as to where something may be happening. This would not be so bad, but certain vital events will happen whether the player is there or not, and the other characters will act according to the information, even though the player may never know what really happened. The only way around this is to play the game enough times to know what all the events are, and you are not left "out in the cold".

A small problem is also typical of Cinemaware games. The elaborate artwork requires a large amount of disk accesses,



Giant ants attack the Lizard Breath drive-in in It Came From The Desert.

release at this very market. *It Came From The Desert* pits the player, geologist Dr. Greg Bradley, against a bunch of giant ants mutated by a recent meteor strike. He initially goes to Lizard Breath, California to study the mineral content of the meteor, but his investigations will soon lead him into contact with a foe even more deadly than he could have ever imagined.

Your quest is divided into two basic stages. First, you must talk with several

in your fight when you gather enough evidence.

Available actions are featured on menus throughout the game. While the game claims to have a text parser, all actions and speech are simply the results of the menu choices made. It is nice to have all options clearly listed, but it can be

and if you don't have a hard disk, you will spend a lot of time simply waiting for the disk to load in the next screen.

Once the game mechanics and actions are learned, actual playing time will run around 30 minutes. A single game can be saved, but because of the short playing time, most it is often better to simply play the game through in one sitting. When

successful mission also has a chance of increasing the squad leader's accuracy, movement, speed, cracking, and detecting ratings.

Accuracy determines how likely your shots are to hit, while speed determines the maximum movement points the leader can get each turn. Cracking allows a player to interface with one of the many computer terminals scattered about most sites to learn the layout of the entire current level. This is very useful, since all terrains start out as "hidden" and are only discovered by personal reconnaissance or by a successful crack attempt. Detecting allows the player to locate all enemies within close proximity.

While the main purpose of play is to advance this leader, the actual fun of the game is in the scenarios themselves. Ranging from the easy Grotto Game Preserve rescue mission to

the very hard Seeker and Destroy sabotage mission.

As with the original Breach, a scenario editor is included to allow for an almost unlimited number of scenarios. The only disadvantage to creating a scenario is that you know where everything is. Part of the fun of the game is discovering where things are placed and how the levels are laid out. Since you know where you put everything, there is not much fun discovering when playing your own scenario, or one you have played before for that matter. But you can create scenarios for your friends, and have them do the same for you. Scenario disks are already available from Omnitrend to expand the game as well, and more are sure to follow.

A large variety of weapons populate the various scenarios. Roving creatures, enemy soldiers, and bizarre aliens all want nothing more than to bite, shoot, or blast you to little tiny pieces. Several items are available to aid you, or sometimes your enemies. Laser rifles and pistols, rocket launchers, rockets, and demolition packs all may be strewn about the battlefield, just waiting for you to pick them up. Protective

suits are also sometimes available to lessen the effect of an enemy hit. Each item you pick up costs some encumbrance points, which tends to slow you down, so you must find a proper balance between carrying everything and having the necessary speed.

The graphics use an overhead 3D perspective that is becoming very common in games today. While the actual terrain and movement is controlled by distinct squares, during play, the graphics are realistic enough to almost get you to forget about the grid and think you are in real man-to-man combat.

Either the mouse or the keyboard can be used for control. Icons for all available options are available on screen, as in the original Breach and their other recent release, Universe III. Starting a new scenario is a bit awkward though. You must first create the game file and then start the game. A way to simply start a game after selecting the leader and the scenario would have made this much smoother.

Digitized sounds are included to add life to many parts of the game. Laser fire sounds like what I imagine a real laser weapon would. It can be a bummer to hear the scream when one of your squad members dies.

One appreciated change over its predecessor is that your squad leader is not



Busting balloons to match the right tickets in Sideshow.

starting to play, do not worry about making mistakes, you will make a whole bunch before mastering the game and each will tell you more about what is going on.

Those who liked other Cinemaware releases will most likely enjoy It Came From The Desert. But others will likely become frustrated with the game very quickly. The arcade sequences can be overcome, but the easy way crucial information can be missed is a severe detriment to play. Replay ability is also limited. Things and locations are the same in every game so once the overall plan is worked out, little challenge is left.

BREACH II

As with productivity software, game companies often release revised versions of popular programs. Breach II is the follow on to Omnitrend Software's popular Breach. As with the original, the goal is to train a squad leader and advance him through the ranks as he leads various teams in different missions in the far future.

The first step in playing Breach II is to create a squad leader. This will be your alter ego during play. He begins life as a lowly Ensign and will gradually advance through the ranks by successfully completing different missions until he is named Admiral of the Fleet. Each

An F-14 has a Mig 21 locked on target in Sega's After Burner.



deleted if he fails a mission. He is simply restored to his previous state. While it may be more realistic if he did die, this is just a game and having a squad leader wiped out after 30 hours of building him is not my idea of fun.

Breach II is a very enjoyable game, and the only tactical man-to-man level game that I know of. The lack of real-time action may turn off some joystick jockeys,

but for the thinking man, this game is worth the money.

SIDESHOW

Arcade game machines have long had a variety of controls to work with their games. In addition to joysticks, they had trackballs, light guns, and even steering wheels. In the home computer scene, the joystick has an almost exclusive reign. Other than the mouse, which comes with the Amiga, and several costly specialized controllers for flight simulators, no other controllers have hit it big on the Amiga. But not wanting to be outdone by the Nintendo, Actionware recently came out with a light gun of their own for the Amiga.

Obviously some games have to be out that use a light gun for any guns to be sold. So Actionware also came out with two action games that could optionally use the gun, P.O.W. and Capone. But evidently these were a little too close to reality and they decided their next light gun release should be a little more light hearted. Thus they produced Sideshow.

What could be more wholesome and appropriate for a light gun than that old favorite of carnival goers everywhere, the Sideshow? While there are no stuffed animals or chintzy prizes to be won here, many of the game ideas adapt well to the Amiga and can provide for an enjoyable time.

Play in Sideshow begins at the ticket gate. From here you can either purchase a child or adult ticket. No one will actually check your age, so the child ticket is the best way to begin. This ticket has two basic advantages: it is cheaper and your hunger will increase at a slower pace. I guess kids can handle more playing time between snacks. Some of the booths are closed to children though, and sooner or later you will have to go in as a full-fare adult.

Tokens are the basic form of currency in the game. Adults start with 15, while children start with 25. When they run out, the game is over. Fortunately, you can win additional tickets by performing very well in a booth, so if you are a good player you can play for quite a while. But each booth can only be won three times before it is closed for the current session, so you must master more than one booth to gain enough tokens to tackle the harder booths.

Each booth has a different event and there are eight in all. The first five are available on both the child and adult tickets.

Balloons is very much like the well known "break the balloon with the dart" game. But here each balloon covers a red or black number. Black numbers are worth

points and are part of a pattern that must be uncovered in its entirety to win. Red numbers are not part of the pattern and will subtract from your score. Some balloons cover colored stars which either give you more tokens, or decrease your hunger level.

Balls contains a grid of old fashioned milk bottles. Instead of throwing the balls into the bottles, green and red balls periodically pop out of the bottles. Shooting the green balls adds points to your score, while hitting the red ones subtracts points.

Potpourri is a take off on the classical shooting gallery. Objects of all types go back and forth on the screen. Most can be shot for varying amounts of points, but hitting some will actually subtract points from your score, so care is called for here. While the manual lists the points for some of the types, some are unlisted and it will take a bit of effort to find out just which ones should be shot.

Knives has the poor clown surrounded by several boxes that open and close at rapid intervals. Hitting an apple or happy face in an open box will increase your score, while hitting a sad face or the clown will cause you to lose points.

The final game of the first five is *Strength*. Here three strength testing machines are set up. As the clocks tick on, you must shoot at the weights at the base of each machine. Successfully hitting the weight will send it cruising to the top and add points to your score. Monkeys and balloons will try to block some of your shots so you must be careful, hitting them will take away points.

The final three games are only available with an adult ticket. *The Clock Shop* has a bunch of different cuckoo clocks along the walls. The goal is to hit either the cuckoos when they pop out at the stroke of twelve, or to hit the pendulums when they are at their apex. Hitting the pendulums at any other time, or hitting the clock face will cause you to lose points.

Haunted Hill is a free for all shooting gallery where things pop up all over the screen. Since everything is fair game, this booth does not require the discrimination of Potpourri, but because it is the most costly booth, many items must be hit if you want to actually win tokens and close the booth.

No sideshow would be complete without the final event, the *Dunk Tank*. You must hit the dunk panels to dunk Willy in the cold water after they have changed color, but before he covers them up again. The programmers added a nice feature that

allows anyone with a digitizer and the proper software to include themselves or a friend in the dunking seat. This might make for some real competition!

Any good carnival goer will also spend some time at the food stand. You spend your tokens here to buy one or more of the its yummy treats, hot dogs, popcorn, cotton candy, and soda pop. Periodic trips here are important since you will be forced to go home if you get too hungry.

Random events can also occur throughout play. It may be a magician trying to sell you his hat, a spare ticket on the ground, or something else entirely. Some are worthwhile, and others are a waste of your time and possibly tokens. The game claims to have some special things also built in, called Easter eggs. The only one I found was that hitting the man at the concessions booth cost me 5 tokens. He did say ouch though.

The graphics are very well done and have the feel of a real sideshow. The balloons and other items do have a cartoon-like feel to them which adds to play. As with *It Came From The Desert*, this richness of graphics does lead to long delay times during play while graphics are loading, but I suppose there was no way around it.

Either Actionware's light gun or the mouse can be used to control your shots. While the light gun can be somewhat fun, I found it difficult to use accurately and ended up using the mouse for most of my play.

The main drawback to the game is its strict adherence to the overall spend tokens theme. Since some of the more expensive booths are also more difficult, you will often have to replay a few of the easier, token earning booths just to have enough money to play them. Some sort of practice mode would have been nice here, allowing the user to hone their skills before competing for real tokens.

Sideshow could have been another of those games that would go great with a crowd of people. It would be fun to compete against other players for the best scores in each event. Maybe they will fix a later version to allow for this feature.

Sideshow is an enjoyable game. While the novelty of the light gun will wear off quickly, the game itself can hold up to a few playings, and since they do write the high score to disk, it is very open to repeated playings to continue the quest for an even higher score.

AFTER BURNER

Finally this month I want to look at another of Sega's conversions of their

arcade games for the Amiga. After Burner did very well in the arcades and has finally found its way to the home computer screen. Flying the awesome F-14 Thunder Cat will let you come face to face with wave after wave of enemy aircraft. Only your quick wits and high calibre flying skill will keep you from being destroyed by contact with either of them.

Obviously there is not much plot in this game, they didn't even get the name right. (The F-14 is really the Tom Cat.) But if you are looking for action, this one is sure to fit the bill.

During the game you will fly over a wide variety of terrain: The open desert, green hills, the open ocean, and above the clouds. You begin your mission taking off from your home carrier. A refuelling plane is waiting for you after the second wave, and you will land at a special air strip after the fourth wave. I am not sure what is beyond this since I only made it to the sixth level.

Enemy planes go in two different directions, towards you and away from you. Those flying away can maneuver a bit but are usually easy to kill. Those coming at you pose more of a threat since not only do they occasionally fire, merely touching them causes a mid-air collision that is always fatal to your craft. And their missiles aren't nice either.

In addition to movement in the four basic directions, you have a special roll maneuver available to get out of the really tricky situations. While it is a bit difficult to learn, once you get the movements down it is fairly straightforward to perform, as long as you remember to do it in time.

Your offensive armament includes both a 20mm cannon and air-to-air missiles. The cannon is the easiest to fire, has unlimited shots and fires straight ahead. Missiles, on the other hand are in limited supply and require a lock-on to go after a target. But they can hit an enemy plane anywhere on the screen.

BRIDGEBOARD USERS!

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Circle 149 on Reader Service card.

The graphics are not quite up to the arcade version, but they are fairly detailed and do get the player into the feel of flying. As is the case with most good graphics, you will likely find yourself leaning during play as your plane banks to one side or the other. The game uses digitized sound that adds to the experience.

I do wish Sega and other arcade game producers would learn how to write high scores to disk. Why have such an elaborate high score name entry system

when it is thrown away when the machine is turned off? Come on folks, get with the show.

After Burner is a very sharp shoot-em-up in the most literal sense. While it may not be the best of the bunch, it is a good game and should provide many hours of entertainment for many arcade players.

•AC•

Products Mentioned

It Came From The Desert

Cinemaware Corporation
4165 Thousand Oaks blvd.
Westlake Village, CA 91362
(805) 495-6515
Price : \$49.95
Inquiry #215

Sideshow

Actionware Corporation
38 W 255 Deerpath Road
Batavia, IL 60510
(708) 879-8998
Price : \$44.95
Inquiry #214

Breach II

Omnitrend Software, Inc.
P.O. Box 733
West Simsbury, CT 06092
(203) 658-6917
Price : \$49.95
Inquiry #213

After Burner by Sega

dist. by Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
Price : \$49.95
Inquiry #212

THE COMMAND LINE

I commented recently about the benefits of upgrading to new versions of the operating system. A problem I always encounter is how to preserve an existing environment which has been extensively customized. If you are new to the Amiga, or have a small system, you may not understand what all the fuss is about. On the other hand, those of us who have been around a while, and particularly those with an expanded system, know what a headache updating can be. We also know how we always seem to forget to make a hardcopy or a backup of those special files that we have so painstakingly created.

WHERE TO START?

There are a number of ways to approach this subject, so we will start with the basics. At the simplest level you could remove the Delete permission from the files you want to keep. The primary files to consider are:

- startup-sequence
- StartupII
- MountList
- system-configuration

Other (V1.3) files to consider:

- Shell-Startup
- CLI-Startup

This is a generic list. You may wish to include other files that are specific to your system. In particular, do not forget any files from the s: directory that you have created. Generally, if you have a recent backup of your system (you DO back up your system, DON'T YOU??), it will not be necessary to include other files in this procedure, unless you like the security of doing so. For many people, this operation may be a waste of time. For those of us with

a hard drive, however, it will be a lifesaver if used as the precursor to an upgrade. The problem I am addressing here is that the files listed above are the default file names used by AmigaDOS with each version of the operating system distributed.

Obviously, the only way you are going to be able to take advantage of the new features provided by the upgrade is to copy the files from the distribution disk to your boot disk, be it a floppy drive or a hard drive. DiskCopy works for floppy users, but you would still have to rebuild the boot disk in order for it to work the way it used to. As for the hard disk user, DiskCopy is out of the question.

So how do we get around this minor dilemma? The easiest way is to use COPY ALL. Therein lies the rub. Unless you have taken measures to prevent it, the latest DEFAULT files will merrily be written on top of your customized jewels. If you do not happen to have a hardcopy or backup of the contents in those files (sure you do... the very latest??) bye, bye hard work and hello to what could be hours of reconstruction. Am I speaking from experience? I'll never tell.

GET WITH THE ROUTINE

Using the protection method described above you could set up a script file such as this (I have called it UG.1):

```
; This file should be used to install any Workbench
; Enhancer Upgrade.
PROTECT s:startup-sequence -d
PROTECT s:StartupII -d
PROTECT s:Shell-Startup -d
PROTECT s:CLI-Startup -d
PROTECT devs:MountList -d
PROTECT devs:System-Configuration -d
```

By itself this may be enough to do the job. However, if you are creating a boot floppy, space is usually at a premium. Here is a possible way to help you copy more selectively. Create a script containing the following lines:


```
LIST DIRS DF0: TO UG.2 LFORMAT="COPY %S%S DF1:%S"
LIST >>UG.2 DIRS DF0:DEVS LFORMAT="COPY %S%S DF1:%S"
LIST >>UG.2 DIRS DF0:FONTS LFORMAT="COPY %S%S DF1:%S"
```

Executing this file (call it what you wish) or entering the lines interactively will create a file called UG.2, containing the following lines. You may now edit this file and remove any directories you do not want. I've used DF1: in the LFORMAT statements shown above as the destination, but you could just as easily use DH0: or some other partition.

File UG.2

```
COPY DF0:c DF1:c
COPY DF0:Prefs DF1:Prefs
COPY DF0:System DF1:System
COPY DF0:l DF1:l
COPY DF0:devs DF1:devs
COPY DF0:s DF1:s
COPY DF0:t DF1:t
COPY DF0:fonts DF1:fonts
COPY DF0:libs DF1:libs
COPY DF0:clipboards DF1:clipboards
COPY DF0:env DF1:env
COPY DF0:Utilities DF1:Utilities
COPY DF0:devs/keymaps DF1:keymaps
COPY DF0:devs/printers DF1:printers
COPY DF0:devs/clipboards DF1:clipboards
COPY DF0:fonts/topaz DF1:topaz
```

Append this file to the first one that we created containing the protect statements with:

```
1> JOIN UG.1 UG.2 as Upgrade
```

You may wish to set the protection so that it makes this file as easy to execute as a simple command with:

```
1> PROTECT Upgrade +s
```

You may then enter:

```
1> Upgrade
```

And all the hard work will be done automatically (make sure the new Workbench disk is in DF0:, silly) with the files YOU want copied to your boot disk. For your own protection you probably would not want to set the script bit on this file, because of the damage it could do should you inadvertently type that command. Unlikely, but you know what they say about an ounce of prevention.

Much of the typing has been done for us with the use of a new option to the LIST command. Each occurrence of %S is used to determine how descriptive the path will be. The two greater-than signs perform the APPEND redirection operation. A single > will cause the file defined to be overwritten. Using two tells AmigaDOS to append the data from this operation to the end of the file described.

RUSTY PLUMBING

I had intended to show you some clever ways of using a few of the new features in WB 1.3. Well, due to poor EXECUTE scripts

and the even worse piping capabilities of AmigaDOS 1.3 this little demonstration has been somewhat anti-climatic. You see, the only variables you can test in an EXECUTE script are the environment variables, and then only the IF command is useful. There seems to be no way to place a file name or even simple text into a local variable. Working with environment variables for that purpose is an exercise in futility. Commodore has the audacity to call this a shell? I, for one, am not impressed. Effective command file execution cannot be performed without some simple means of manipulating the data.

As for pipes, we are still a long way from the classic definition. There is the PIPE: device which should more appropriately be called an Inter-Process Communication (IPC) device. It does well, but as for the pipes most of us have come to know, forget it. Perhaps I am being harsh on the old PIPE:. Part of the problem is that most of the existing AmigaDOS commands do not take too kindly to input from anywhere but the keyboard. Most of you are familiar with the redirection symbols: < for input and > for output. In typical shells the pipe symbol is the vertical bar (|). For any of you who may not know, a pipe is a means of porting the output of one program to the input of another. Yes, it is similar to IPC, but for a shell environment it relates more specifically to Operating System commands and transferring information between them in a very efficient manner. For example, if we had a real PIPE, we would be able to send the output of the LIST command through the SORT command and produce an alphabetized listing complete with all the needed information. Sure, you can do that now with the following:

```
1> LIST >tmp.lis
1> SORT tmp.lis tmp.srt
1> TYPE tmp.srt
```

But with a true PIPE, it could all be accomplished on a single line without the overhead of temporary files—observe:

```
1> LIST | SORT
```

The final result for each operation is the same with some notable exceptions in the latter example: speed and the lack of unnecessary files to clean up.

This is the standard method used in Unix. Forgive me for constantly alluding to that (foreign) operating system, but many of the design concepts for AmigaDOS were based on Unix, so it only seems natural to draw parallels. Would you rather I made correlations to MS-DOS? Hmm... didn't think so. After all, the Amiga is much closer to a Minicomputer than it is to an ordinary PC, right? But I digress.

PIPE: can be useful for sending data from one program to another but only in the sense of file I/O. In other words, the programs may send the output generated to PIPE: as they normally would to something such as PRT: or a disk file. PIPE: may be used as input in the same manner. The real power of PIPE: is its ability to handle the operation asynchronously. For example, if you have a large file from your favorite editor that you wish to process through a text formatting routine of some kind, the normal process would be to write out the file from the editor and when finished,

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use that file as the input to the text formatting routine. For small files this is usually no big deal. With files of significant size it can take a while before you are allowed to look at the final product. On the other hand, you could send the information directly to a PIPE: channel. To use more than one PIPE: channel at a time simply provide a unique designation such as:

PIPE:a, PIPE:b, PIPE:1, PIPE:2, PIPE:IN, PIPE:OUT, etc...

Then if you were to copy PIPE:a to the formatting routine, it could begin processing the data immediately without waiting for the editor to finish sending all of the data. This can be useful in situations where one program is slower than another in processing the information. It is something like pouring water into a bucket which has a spout pouring into another vessel.

LETTERS

A reader from Kansas, Mr. Robert C. Batson, has requested that I compare WShell to the program I just reviewed, Tshell. I will go one better Robert. Because of my constant frustration with the inabilities of the AmigaDOS Execute command and its band of hoodlums (remember, execute also means "to inflict"), I have been evaluating a variety of shells. A couple of them are Public Domain and, for the most part, they are very good. Next time we will begin looking at alternatives such as WShell and begin a comparison of them to the AmigaShell. WShell was written to use ARexx as its

native script language, and I hope to examine the ARexx alternative in future issues. I realize that ARexx's being included in WB 1.4 is the talk of the town right now, and I, for one, am very glad to hear it. If and when ARexx is included as part of the Amiga's Operating System, this machine will enter into a realm of capability that boggles the imagination.

R. H. Hall, from New York, asked an interesting question. He wanted to speed up the execution of certain files and decided to do this by eliminating disk accesses. Of course, in order to limit disk accesses, he had to make certain commands resident in RAM: and then set the scripts to execute in RAM. He tried to do it this way:

```
execute file in RAM:
the commands being executed were resident
RAM: t existed
assign T:RAM:t
```

Unfortunately, it was not entirely successful. He complained that he continued to experience unexplained disk access. A lack of information makes it difficult for me to determine what might have caused the continued accesses to disk. After a few intermediate steps he edited the execute file to begin with:

```
.key a
  where
    there is no <A> in the file
    there is no corresponding argument
    in the execute command itself.
```

This solution worked, but the reader wondered why inserting .key did the trick. The reader's execute file was edited to include a dummy .KEY statement which has the effect of forcing Execute to copy the file to the T: directory in an attempt to replace the parameters with the supplied value. Since no value is supplied and the parameter is not used anywhere in the file, no substitution is performed. Since the T: directory is in RAM:, the Execute command has been duped into doing everything there.

The reader states that this operation is performed during startup. My guess as to why the first option—making all commands Resident, copying the script to RAM: and executing it from there—did not work is that the file has not been executed from an AmigaShell process. The standard CLI console window, which is the nature of the original AmigaDOS window in startup, does not recognize anything that RESIDENT does. The Resident command requires a Shell window to function properly. If the file is being called from s:startup-sequence, try moving that Execute call to the S:StartupII file, or better yet, create a new console window with:

NEWSHELL NEWCON:0/0/640/200/AmigaShell

I have had some anomalous indications when trying to execute files during startup. I have also found that providing the routine its own console window generally solves the problem.

Thank you for your letters, and I encourage others to write in care of *Amazing*, or you may send EMail to R.FALCONBURG on GENie. I will try to answer your questions as quickly and accurately as possible.

•AC•

TV*TEXT PRO

• review by Barry Solomon

TV*TEXT was one of the earliest titling programs for the Amiga. For some reason, I never tried it. I had heard nice things about it, but just never had the urge to run out and buy a copy. In August of '89, I saw the (then) soon-to-be-released TV*TEXT Professional demonstrated at the AmiEXPO show in Chicago.

It was being put through its paces by John and Copper Bittner who are the Zuma Group.

I watched, spellbound, while John (who wrote the program) zipped through some very neat stuff. He was doing a demonstration for a local Amigan, and I was privileged not only to see this fantastic demo but also to watch the face of this young Amigan who, I am sure, was one of the first people in Chicago to buy this program. He could not take his eyes off the screen.

The program has been available for a few months now and, having had a good chance to put it through its

paces, I would like to share some of my impressions with you. Since I never worked with the original TV*TEXT, and since many readers may not be familiar with it, I have chosen to do a full review of this fine product, rather than just highlight the new features.



Figure One: Using Stencil, boxes, circles, etc. can be "dropped" over text without affecting it.

THE MANUAL

The manual was written by Bill Burkett, whom I do not know and will probably never meet, but to whom I sincerely feel I owe this plug: I can honestly say that in my two years in the Amiga community, I have never seen a better written manual. Period.

(continued)

(Just before going to press, one of my editors here at AC pointed out that this seemed to be as much a review of the manual as a review of the program. I

working copies, how to install the program on a hard drive (should you have one), and how to install the fonts on your hard drive. Fonts? Oh, didn't I tell you? The first three

This first tutorial also explains font loading (from external directories); use of the scroll bars, lists and requesters; how to enter and position text; and saving and re-loading your work (with either single or double floppy drives, as well as hard drives).

All text in TVT_Pro is rendered with color, shadows, highlights and more as set by the current preferences menu. One of the nicest benefits for the beginning user is the ability to render his or her name in seconds, complete with 3D-type shadow.

Tutorial Number Two deals with backgrounds. The user is shown how to flood the screen with a chosen color, how to create several types of dithered backgrounds, how to use Cut and Undo, and how to lock the background. Dithering is available in eight different patterns and is usable with four different preset or user-definable color ranges. The results are very professional-looking dithered backgrounds.

Once a background has been rendered, or at any time (even after text has been placed) the background may be locked. This locks the entire current screen, so that any text or graphic placed over it can be moved or completely removed without touching anything already placed. This feature can seriously enhance creativity by allowing the user almost endless experimentation without risk!

Tutorial Number Three explains such features as Stencil, Reverse, and Object loading and rendering. Once your background has been locked and you have rendered text or a graphic over it, Stencil is a way to lock your new text or graphic. This feature was lots of fun to play with. First, I created a background and locked it. Next, I entered some text. Now let's say I have decided that the text would look nicer inside a box. I could render a box, pick up the text, place it in the

box, and then pick up the box with the text and place it on the screen. Seems like a lot of work, huh?

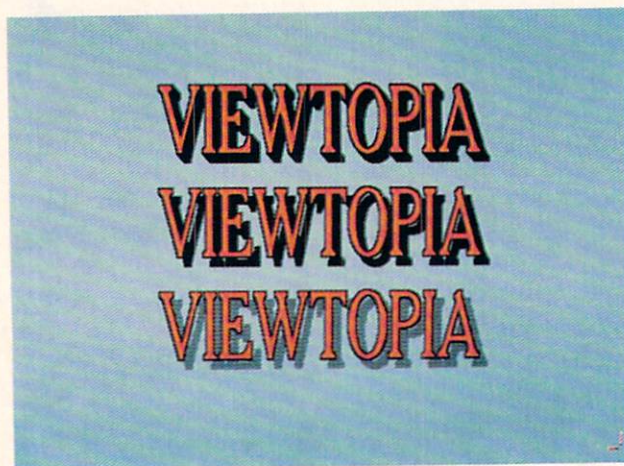


Figure Two:
*Drop, Cast,
and
Transparent
shadows are
available.*

honestly hadn't intended to step through the manual as part of this article, but it is so well laid out that following it was the best way to acquaint myself with TV*Text Pro's features. Therefore I thought that the same might be true for you readers!

The manual starts where a good manual should start: explaining itself and its layout. It is divided (as the Welcome section will tell you) into four parts:

- Program Installation Instructions
- The Tutorials
- The Reference Section
- The Appendices

Also included is (hang onto your hats!) an Index! I know that many of you who have bought more than a handful of Amiga programs have run into this sad truth about Amiga manual writers: many of them seem to be totally unfamiliar with the concept of an index. They assume, apparently, that you will read the manual, memorize it, and never need to refer to it again. (I recently spent \$500 on an Amiga software package [I will omit the name to protect the lazy] and, even with a 200+ page manual, there was no index!) Anyway, for those of you without eidetic memories, this manual actually can be used for reference.

PROGRAM INSTALLATION

These first few pages tell the new owner, clearly and succinctly, how to make

volumes of the famous ZUMA fonts come free with TV*TEXT Professional. Not a bad deal! Also discussed is how to use Color-Fonts with the program (these, however, are not included).

TUTORIALS

The Tutorials section is fifty-eight pages long and contains five tutorials. Each is progressively more detailed, touching on more of the program's features, yet each is simple to follow and thoroughly explained. In fact, they are some of the best tutorials I have seen. The first one begins as simply as explaining how to start the program from the Workbench and from the CLI (for you masochists out there. Oops, my prejudice is showing!)

Also explained is the Screen Format Requester. This allows you to choose the number of screen colors and resolution. TVT_Pro allows lo-res and hi-res modes, with and without overscan. Extra half-brite mode is also supported.

*"I can honestly say
that in my two years
in the Amiga
community, I have
never seen a better
written manual.
Period."*

Well, by setting Stencil to "on" we can create an appropriate box and place it directly over the text. The box will cover the background but will not cover the text. In other words it will not appear anywhere the text is. So we have added this box in one step! (See Figure One.)

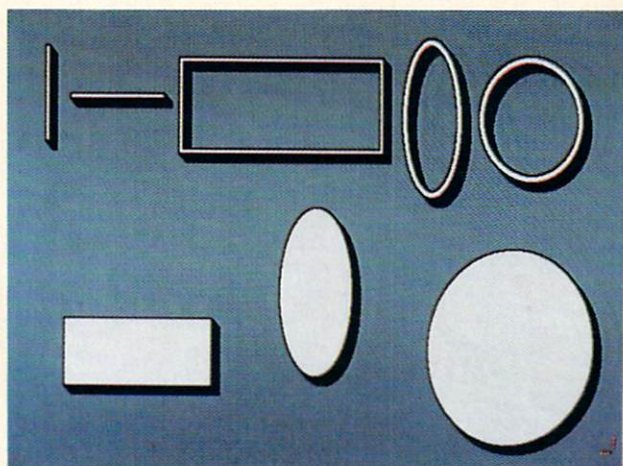
Objects, as the program refers to them, are actually brushes, saved in other paint programs, which can be loaded into TVT_Pro to create dazzling effects. Objects can be loaded "as is" — that is, with their own palettes — or, by loading them with "auto color", a new palette will be computed from TVT_Pro's current palette. Objects may also be "rendered" in the same manner as text. Choosing "Render Face" will render the outline of the object according to the current preference setting. Choosing "Object Face" will first remap the object's colors and then "render" the outline. This is the perfect way to add a company's logo to your title screen.

Tutorial Number Four thoroughly explains the idea of Render Preferences, its various components and how to change and adjust them. There are four components to a preference which determine how text, shapes, and objects may be rendered. The Face, obviously, is the face, or front, of your character or object. The Outline is just as it seems. You may adjust not only the outline color, but also its thickness. Shadow allows choice of shadow type (drop, cast, or transparent—see Figure Two), as well as depth (thickness). Lastly, Light Direction allows you to choose the direction of light upon text and objects and, therefore, the direction of the shadows. In total, there are thirty-eight preset Preferences combinations, any of which may be edited (modified). In addition, you may create your own settings and, as if this

wasn't enough, you may also assign any ten of these preferences to your function keys (F1-F10), for ease of access! (More on these later!)

ally teach a lot more than in your average manual, this layout actually makes it easier to use the reference section as a reference.

Figure Three:
Various filled
and unfilled
shapes may be
created.



Tutorial Number Five delves further into this world of Render Preferences explaining, in detail, how to edit existing Preferences and how to create your own. Any changes you make may be 'used' in your current session. In addition, they may be saved for future use.

REFERENCE

The reference section of the manual is 120 pages long and covers every feature of the program. Each feature is discussed along with its use and placement in the menus or requesters. Instead of laying this section out in the order in which features appear in the menus (as most manuals seem to do), the author decided to do it alphabetically. And, since the tutorials actu-

APPENDICES

After the reference section you will find five appendices. The first appendix covers customizing the program to your needs. Among the customizable features are screen resolution, interlace, overscan, and number of colors. This way, if you always use a 16-color, hi-res, overscan screen, the program may be set so that the program boots up this way each time. Of course, it is always possible to change these settings "on the fly" but this can save valuable time.

The second appendix covers the use of Amiga color 0 and its implications and use in backgrounds, transparency, and with genlocks.

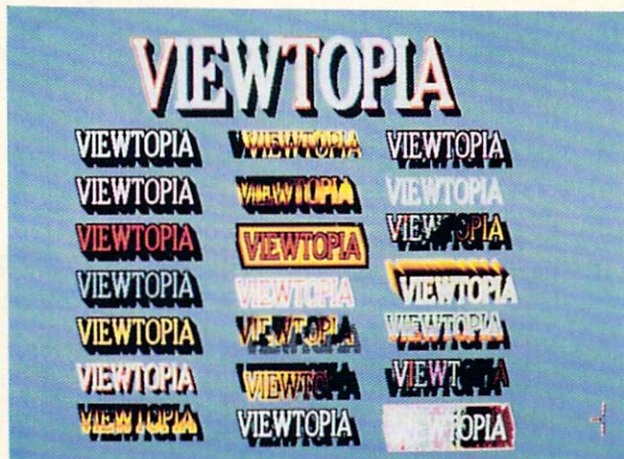
The third appendix is a discussion of the limitations of memory and the possible related problems of multitasking. An interesting note is that I wrote this entire review using the word processor in The Works while running TVT_Pro in the background.

RENDER PREFERENCES

The Render Preferences setup of TVT_Pro is a joy to behold. As mentioned, there are four main attributes of a Preference. The first, Face, gives the user six different face choices: Solid, Ful, Mid, Split, Cycle, and Diagonal. The last five types are various dithering patterns.

The Outline Requester allows a choice of color and depth (thickness). Also, an outline may be solid, or it may have any

Figure Four:
Text may be
squeezed
together or
stretched out.



(continued)

one of seven different "fills". These range from various dither patterns to anti-aliasing to "Glint". The "Style" of the outline is also user-determined. Outl will completely outline the character. Edge will outline in conjunction with the selected light direction, while Xtrd will extrude the outline in conjunction with the light pattern.

your current Preferences setting. The thickness of these borders is shown in pixels and is adjustable.

Fonts can easily be chosen and directories may be changed at any time. One feature I love is a graphic representation of font size in the Font Size Requester. It is great to see exactly what your font size is

create tile or wallpaper-style backgrounds. (See Figure Five.)

Text styles may be plain, italic, bold, underlined, or any combination of these. All text may be either left or right justified or centered. (See Figure Six.)

SUMMING IT ALL UP

I have tried over and over again in my columns and articles to avoid giving any of my readers the impression that any one software package of a given type will fill all of their needs. Personally, unless your needs and wants are very narrow or you are willing to spend something like \$1000 per program, I don't think these types of programs will ever exist.

TV*TEXT Professional does not record and play scripts of multiple pages as at least one of its competitors can do. It will not create animated screens (unless you count color cycling) as some paint programs can do.

What TVT_Pro can do, however, is create lush, professional-looking title screens with very little effort beyond that needed to type in the text! While it may not be the only titling program you will ever use (it is not the only one I use), I can

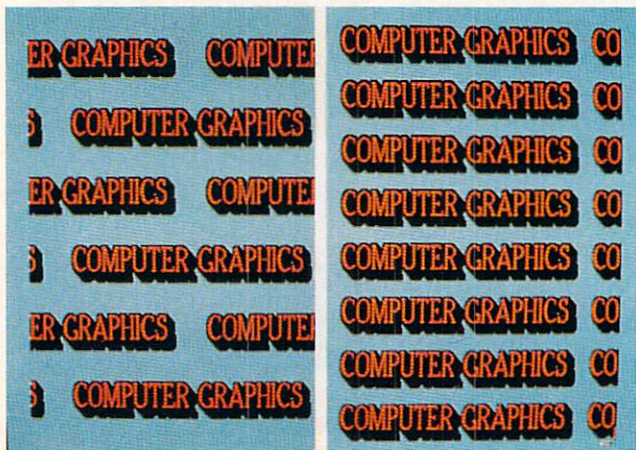


Figure Five: Tile (left) and Wallpaper (right) backgrounds are available.

Shadow options also abound. Shadows are adjustable by color, depth (thickness), and style. As mentioned drop, cast, and transparent shadows are available in any color or thickness. Strobe is another shadow option which produces a "shadow" that utilizes a range of colors as determined by the Color, Cycle, and Repeat buttons. Glow, similar to strobe, shadows characters completely, regardless of the light direction.

Light direction is the last of the preferences settings. The lighting may be set so that light falls from any of eight different directions.

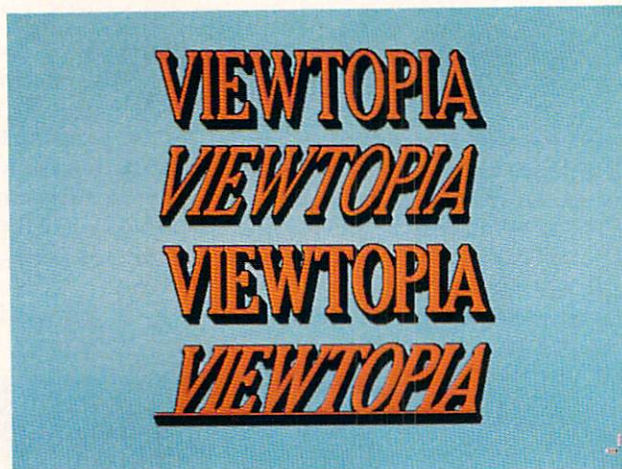
Unless my math fails me there are at least 3024 preferences combinations without counting different outline and shadow thicknesses and the use of different colors!!

MORE FEATURES

The features of TVT_Pro are so many and varied as to be far beyond the scope of this review. Not only that, they are useful, as opposed to gratuitous. I can't recall a single feature that made me think, "That's great, but what the heck can I do with it?"

Besides the ability to create filled and 'rendered' boxes, ellipses and circles, you may also create various Borders. These may be horizontal or vertical lines, boxes, ellipses, and circles. (See Figure Three.) All of these are also rendered according to

Figure Six: All text is adjustable for style. Normal, Italic, Bold, and Underlined, are supported as are combinations of styles.



before you choose it. Also the width of a line of text may be adjusted before rendering. This can create an illusion of almost unlimited numbers of fonts. (See Figure Four.)

The standard editing features of Cut, Copy, and Paste are all available as are Resize and Undo. Additionally, a rotate feature is available which works on text as well as graphics.

Grid backgrounds of any size and color may be created automatically. Also, any text and/or graphics may be used to

almost guarantee that, if you ever try it, you will wonder how you managed for so long without it.

•AC•

TV*TEXT Professional
Zuma Group
6733 N. Black Canyon Hwy.
Phoenix, AZ 85015
(602) 246-4238
Price \$149.95
Inquiry #206

Bug • Bytes

by John Steiner

PageStream Version 1.8 is now being shipped to current registered users. The upgrade consists of three disks: a program disk, and two drivers disks. There will be an addendum to the current manual (Version 1.6), and the upgrade package contains information as to how to order a completely revised manual. New and improved features of PageStream 1.8 include improved dot-matrix print output, better font handling, improved import modules, improved file requester, better drawing tools, improved screen displays, and support of several new text import modules. After having worked at some length with PageStream 1.8, I am convinced that it is much more usable and a far more dependable program than the earlier versions. If you did not register your earlier version, send in your registration card to receive your Version 1.8 upgrade.

I received a bug report regarding PageStream 1.8 on People Link from Jon Wolf, the Amiga Public Domain Librarian for the Boston Computer Society. (Jon is known as J. Wolf on PLink, and J.Wolf on Bix.) Jon was running Memwatch II (Fred Fish #87) when he discovered that PageStream changes pointers in low memory three times as it boots. This may or may not cause random crashes on the Amiga.

When low memory pointers are changed, it is even possible for the system to crash after PageStream has closed, which may cause you to falsely accuse another program of being responsible for a system crash. If you run Memwatch II before running PageStream, it will give you the option of resetting the low memory pointers to their original value after PageStream changes them.

Also, quoting from his letter, "Somewhere in the middle of the page (not text boxes), I created an 18-point object. The object was the word Amiga (I used an 8.5" x 11" page). I then duplicated this object. Oh yes, any font will do. Then I

rotated this so that the top of the word was facing left and the bottom was facing right. Then I aligned the rotated copy all the way to the left. It then vanished off of the screen. The original object now cannot be selected or moved. If there are multiple objects, none of them can be moved or selected. I can do a "Select All" to select my object, and it looks to be selected. If I try to drag this object, I crash with a Guru #4.0."

As I have been working on a review of PageStream 1.8, I attempted to duplicate Jon's bug. I was able to duplicate it as described with the exception that my system did not Guru. It did, however, lock up the task and refuse to allow me to exit when I tried to quit the program. This problem could cause damage to your document, be careful when rotating duplicated objects.

To demonstrate a bug in the text export function, create a page, put a text box on the page, and put text in this box. Now insert a page in front of this page. Create a text box on the new page and put text in the box. What you have just done is created a page 1 and inserted a new page 1. Now export the ASCII text. If you look at the exported file, you will find that page 2's text is in front of page 1's text. Page 2 is the original page 1. Page 2's text should be after page 1's text, page 1 being the inserted page. If you need to export the text from PageStream, keep this problem in mind, as the exported text ends up being rearranged.

Another problem I found is in regard to object rotation. If you rotate an object and then resize it, the object rotates itself to a mirror image of its original state. You can simply reopen the rotation requester and reset the first two values back to where they were when you finished the rotation. To work around this bug, be sure to resize the object before you rotate it.

While on the topic of desktop publishing software, I had the opportunity to work at some length with PageSetter II. The program, a much improved release of the original PageSetter, has a small problem with its printouts. A close cousin to Professional Page, PageSetter II exhibits the same print problem as reported to be in Professional Page in an earlier "Bug Bytes". The location of an object during page layout and its location on the page after printing to dot matrix are not the same. Objects are placed 1/4 inch down and 1/4 inch to the right of where they were placed on the on-screen page.

There are a couple of possible workarounds. If your printer has a repositionable paper feed mechanism, you can misadjust the top of form and left margin by 1/4 inch. If you have an HP LaserJet or compatible, an HP DeskJet or another sheet-fed printer that will not let you position the paper, the easiest workaround for the problem is to set the page left and top margins to 1/4 inch less than they should have been. This will essentially offset the output by the correct amount, and allow the printout to be positioned properly.

• • • • •

Howard Audet wrote via electronic mail (Howard A on PLink) about a problem that can occur when using Professional Page Version 1.3 and Transcript together. Professional Page is able to send text through a port to Transcript, if it is currently running, so that you can perform major editing functions, such as spell checking, which cannot be done from within Professional Page. A hot key combination and menu choice are available (when you are in Professional Page text mode) that sends the text into Transcript. If Transcript is not currently running, Professional Page knows that it is unavailable and ghosts the menu choice, refusing to honor the hot key combination. If Transcript is iconized or

• • • • •

"sleeping" (in order to take as little memory space as possible), and you try to send text from Professional Page, you will be off to see the Guru. Be careful with this problem, because you could lose a lot of work.

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PKAzip, an archiver for compression, storage, and transmission of Amiga files, has a problem with the SRC and DEST functions. If you have a very large assign list (somewhere above 50 items), PKAzip will crash. I am told that author Dennis Hoffman is aware of the problem and will have a fix for it in a future version. In the meantime, the only workaround I can think of is to write a script that removes the assigns, then executes PKAzip, and reinstitute the assigns when the Zip session is done. PKAzip is shareware and can be found on most information service download libraries.

• • • • •

Bars & Pipes, the music sequencing program from Blue Ribbon Bakery, Inc., is at Version 1.0d, and Melissa Jordan Grey, the program's designer, has announced that all registered owners should receive a copy of the program. If you have not sent in your registration card, you should do so as soon as possible.

• • • • •

An open letter to the original owners of the Taurus-Impex version of X-Cad has been posted on the major information services. The letter, written by David J. Brogan, Managing Director of CADVISION International, is offering an upgrade to X-Cad owners. The newest versions of X-Cad, X-Cad Designer, and X-Cad Professional have been created by a company called CADVISION International. CADVISION has purchased all rights to the use of the original X-CAD source code from the developers, who went out of business. They have tried to obtain the database of registered X-Cad users, so they can mail an upgrade offer.

According to the letter, the key enhancements to the product are: AutoCAD DXF read and write; user-definable dynamic screen menus; a screen menu template for ease of use; export to Professional Page; export to Sculpt for 3D visualization; enhanced/new printer and plotter drives; Summagraphics tablet support; 68881 math coprocessor support; Attributes Dimensional tolerancing; and an

understandable manual in a decent box. The price of the upgrade is \$199.00. Payment by Visa or MasterCard is accepted. As proof of purchase, the Taurus serial number and date of purchase will have to be quoted when ordering.

• • • • •

I received a letter from The Zuma Group, publishers of TV*Text, TV*Text Professional, and TV*Show. As reported in an earlier "Bug Bytes", the letter told of the continuing ability to upgrade from TV*Text to TV*Text Professional. In addition, it announced the release of TV*Show Version 2. Enhancements to TV*Show include support of IFF ANIM 5 animation format used by DeluxePaint III, Videoscape 2.0, AnimMagic, and other Amiga animation programs. IFF 8SVX sound effects can be added to any on-screen event, and you can even synchronize your sound to a specific frame in your animation.

If you already own TV*Show, you may upgrade to TV*Show Version 2 by sending page C-1 from the original TV*Show manual with an upgrade fee of \$30.00. If you want next day air shipping, include a \$10.00 fee (U.S. residents only).

• • • • •

Antic Software's PHASAR (Professional Home Accounting System And Register) is being upgraded to Version 4.0. The new release contains several enhancements including an improved interface with multiple scrolling windows. The new version retails for \$89.95, and Version 3.0 owners will be able to upgrade to Version 4.0 for \$39.95. To receive the upgrade, you must send them your original disk and a check or your credit card information.

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, you may notify me by writing to:

John Steiner
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722

...or leave EMail to Publisher on
People Link
or 73075,1735 on CompuServe

•AC•

Products Mentioned

PageStream 1.8

Soft Logik Publishing Corp.
11131 S. Towne Square, Suite F
St. Louis, MO 63123
(314) 894-8608
Price: \$199.95
(1.8 upgrade: no charge)
Inquiry #200

PageSetter II Professional Page V1.3 Transcript

Gold Disk
P.O. Box 789
Streetsville Mississauga,
Ontario, Canada L5M 2C2
(416) 828-0913
(PageSetter II) Price: \$149.95
Inquiry #201
(Transcript) Price: \$69.95
Inquiry #203
(Professional Page V1.3) Price: \$395.00,
Inquiry #202

Bars & Pipes

Blue Ribbon Bakery, Inc.
1248 Clairmont Road Suite 3D
Atlanta, GA 30030
(404) 377-1514
Inquiry #204

X-CAD Upgrade

CADVISION International
Hazlitt Mews Hazlitt Road,
London, W14 0JZ.
44-1-603-3313.
Fax: 44-1-602-2627
Price: \$199.00
Inquiry #205

TV*Text Professional TV*Show II

Zuma Group
6733 N. Black Canyon Highway
Phoenix, AZ 85015
(602) 246-4238
FAX: (602) 246-6708
(TV*Text to TV*Text Pro Upgrade)
Price: \$50.00
Inquiry #206
(TV*Show II Upgrade) Price: \$30.00
Inquiry #207

PHASAR

New Version (4.0) \$89.95
Version 3.0 Upgrade \$39.95
Antic Software
544 Second St
San Francisco, CA 94107
(800) 234-7001
Inquiry #208

Roomers

by The Bandito

[The statements and projections presented in "Roomers" are rumors in the purest sense. The bits of information are gathered by a third party source from whispers inside the industry. The statements, comments, and observations in this column are those of the author only. Accordingly, the staff and associates of Amazing Computing™ cannot be held responsible for the reports made in this column.]

Are the dogs of business war looking hungrily at Commodore? The Bandito has heard whispers that HP and General Electric/RCA are both sniffing around at Commodore's corporate pants legs. The theory is that HP wants access to Commodore's strong European presence in the business and consumer markets, and Commodore's Amiga technology as a response to IBM and Apple's multimedia push. The rationale given is that HP wants to be a major computer supplier, and HP just won't give up. They have been trying to crack the PC market for years. They now have the best-selling printer line (LaserJet, DeskJet, PaintJet, etc.) and they bought Apollo to put them in the Number 1 spot in the workstation market ahead of Sun. So as a strategic move it makes some sense.

But what does HP know about marketing a computer like the Amiga to the consumer market? Good question. The Bandito's reply: What does Commodore know about marketing a computer like the Amiga to the consumer market? The Bandito has heard it said of both HP and Commodore, that if asked to market sushi they would label it as "Cold Dead Fish". On the other hand, Commodore is trying to repair that image using their new marketing organization and multimillion dollar spending on the Amiga, with some success. HP is still trying to find a corporate ad strategy that works.

But the Bandito doesn't expect such an acquisition, since HP is still busy digesting Apollo. Besides, Irving Gould owns a big chunk of Commodore (enough to block most any takeover attempt) and he

still believes in the Amiga's ability to pull Commodore out of its slump. Now if only Wall Street shared that belief, maybe the stock would be higher than 10.

Hip magicians Penn & Teller are reportedly into Amigas, acquiring a complete set of hardware for home editing and tricks. It is possible we will see Amigas joining in some of their acts in the future. The Bandito has heard that they may be making a new videotape of special interest to Amiga fans.

Video is definitely the hot area for the Amiga in 1990. The Bandito hears that Amigas will be getting a high-end video editing system (over \$10,000) sometime in 1990, and a low-end video editing system (for well under \$1,000). There are rumblings of some startling developments in Amiga video for this year. Expect to see higher screen resolutions and true 24-bit images coming out of Amiga screens this year—at prices that are affordable.

Of course, audio goes with video, right? Perhaps that is why the Bandito hears rumors that a full 16-bit sound board will be appearing for the Amiga, making the Amiga a full sound editing workstation at the professional level. With the new Synthia, you can already create 16-bit instruments (you just can't hear them in their full glory unless you download them to a synthesizer). This and the Amiga's other advantages in graphics, animation and price may make the Amiga the new computer of choice for the professional musician.

Commodore is going back to school. No, they are not taking classes (though perhaps there are some subjects they should study), but they are hiring plenty of people in the education department. They are gearing up for a long term assault on the education market. It is going to be a tough fight, but the Amiga has already gained a toehold in some places (notably at universities in the graphic arts departments). Commodore hopes to make it a three-cornered battle, offering the ease of use of the Macintosh with the low price of the Tandy, and far better color graphics, sound, and animation than either of them.

The Bandito thinks that the A500 is the perfect computer for the schools. Now that more educational software is appearing for the Amiga, it looks like Commodore has a fighting chance to get a chunk of the education market. We will see what happens when the schools do their buying in the springtime.

Dan Silva has left Electronic Arts and gone freelance. What does this mean for the future of DeluxePaint? Electronic Arts may try to find a programmer to add HAM mode to DeluxePaint, since the lack of that graphics mode is its weakest point. The Bandito knows how hard it is to work with HAM mode, so Electronic Arts may have to dig hard to find a programmer that can handle it. Do not expect a major upgrade any time soon, since Dan was the driving force behind the last one. *[Editor's note: Electronic Arts has demonstrated an ongoing commitment to enhance and upgrade all products on an ongoing platform. Do not expect that to change.]*

Electronic Arts is mostly getting out of the creativity/productivity business to concentrate on games. What energies they do have left are going into IBM and Macintosh programs. EA's big push is in cartridge production. Their vision is that the majority of software in the future will be on cartridges or CD-ROMS, with the disk-based software being phased out in a few years. The Bandito predicts that disk-based software will be around longer than that.

The Bandito issues a call to developers—we need full motion video on the Amiga to counter the "multimedia" hype that IBM and Apple are putting out. Apple's been pushing it for months. IBM led off their Comdex booth with a "multimedia" presentation. Those guys are going to run away with the market if the Amiga community doesn't counter their hype. We have all seen NewTek's Demo Reels, so we know the Amiga can do full motion video. Let's get the hardware and software out to make it easy for anyone, and we will send IBM and Apple scurrying for cover.

The Bandito has found out that the Lynx hand held videogame was offered to

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LOOK FOR US AT AMI-EXPO IN MARCH!

Circle 165 on Reader Service card.

Interesting things are happening in the world's biggest Amiga market — West Germany. One of the more innovative companies there is Gigatron. They are best known for the Minimax memory expansion for the A500 and Amiga 2000, but they have other interesting products: a multifunction card for the A500 that includes memory, an analog/digital converter and a hard disk controller. Even more interesting is an internal hard disk for the A500 — a 2.5" non-SCSI hard drive with 20, 40 or 100 MB. The Bandito wonders how they fit it into an A500 case. Oh, and they also offer a new motherboard for A500 with a 68020 and internal hard disk.

These widgets sound pretty amazing, but the best is yet to come. At the CeBIT show in March they plan to introduce a laptop Amiga, which sounds like the machine that some people have been waiting for. The laptop contains a new motherboard developed by Gigatron which offers some startling features. It has 3 internal slots for things like a modem card, a 68020 card, or even a transputer card (unfortunately, the slots are not Zorro-compatible, so you will have to buy the add-ons from Gigatron). There is also room for an internal 2.5" hard disk. The display is either a 16 gray scale LCD or a gas plasma display, both with a resolution of 640 x 480. Interestingly, the display supposedly uses the RGB output as a source, thus allowing sprites and all Amiga graphics modes to work (though how well they map to 16 grays is another matter). On an LCD display, motion does not work well at all, unless it is an active matrix screen; this is not. The keyboard has an integrated trackball instead of a mouse. Supposedly, you can get 8 hours of usage on one battery charge. The story told by the developers is that Commodore did not believe when they were told about it, but had to see it with their own eyes. Well, the Bandito will not really believe it either, until it is sitting on the desk. Oh, and of course you want to know the price. Somewhere between DM 5000 and DM 7000 or about \$2750 to \$3850, at the current exchange rate, depending on the configuration.

Color LCD displays are already here and are expected to improve in quality and drop in price this year, so it is possible that might be an option for the laptop in 1991.

You know, if Commodore was really on the ball they would think about redesigning the A500 to be a little more portable. Even if it just had a handle on the back to make it easy to carry.

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Circle 127 on Reader Service card.

Commodore first, and they turned it down. They looked at for a while, and then said "there's no profit in it". So RJ and the two Daves' had to grit their teeth and sell it to Atari. Now the Lynx is selling out at FAO Schwarz and the Sears catalog, and those favored few who have them can scarcely keep them out of the paws of eager borrowers. It looks like Atari will sell all they can make for the next year. So Commodore missed out on that chance, but they wanted to put all their energies into their Amiga based video game. Time will tell if they made the right choice...

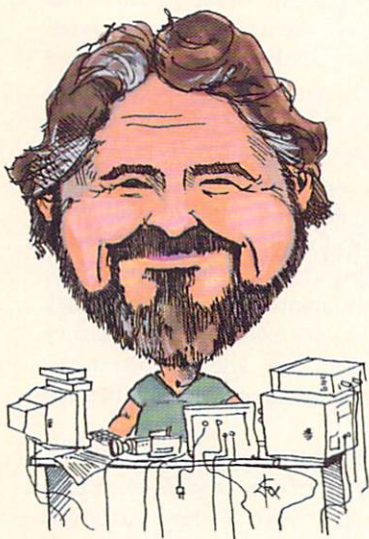
The wheeling and dealing continues in the entertainment software business. Software Toolworks (publishers of Chessmaster 2000/2100 and Life & Death, to name two) has amassed a war chest of \$20 million dollars recently by making a stock offering. They just announce the execution of a definitive merger agreement which provides for the acquisition of Mindscape. Insiders whisper that the deal wasn't so much for the software titles (of which the Star Trek license is perhaps the best known), but for the Nintendo cartridge rights that Mindscape possesses as a licensee. Now Software Toolworks can do Nintendo cartridges without going through all the hassle of setting up a licensing deal.

Back home in the retail market, Amiga hardware is doing better than software lately. The hope is that software sales will jump in 1990, as all the new owners discover that they need some software, or all they have bought is an interesting way to practice typing skills. Apparently, A500 sales are good, but there is not enough margin there to keep the dealers happy. They really make the big bucks on software sales. But there is some good news: since the price cut, A2000's are moving much better. And dealers make more money on an A2000 sale than on an A500.

The Bandito's latest information is that the A3000 will be announced in March or April, then shipping sometime in the summer. What's it like? Pretty much what you've already heard: a 25 MHz 68030. What's new is that it may come with Unix System V, and the whole package (with color monitor, 300 megabyte hard drive, and 6 megabytes of RAM) for under \$7,000.

The Bandito has heard that makers of add-in cards may have some problems with the new 32-bit bus design in the A3000, though it is supposed to be compatible. The key word there is "supposed". Somehow, these things never do seem to

(continued on page 87)



video Schmideo

by Barry Solomon

I GOOFED!

That's right I did. But before I cry *mea culpa*, please allow me to sidetrack for a moment. This month of March should be an exciting month for us Amiga videophiles. It's just possible (last I heard) that a long-awaited (and I do mean *long-awaited*) video product will start shipping toward the end of the month. Also, I'm expecting to see another new entry from a long-time Amiga hardware company—their first genlock.

I have omitted the names of the above-mentioned companies, not to protect the innocent, but rather because I know how production can be, and I don't want to be responsible for making any of you readers crazy.

March is also the time for the AmiEXPO in Washington, D.C., and one never knows what exciting new toys one will see at an AmiEXPO. As Amiga video becomes more popular—and more important—it continues to be a bigger and bigger force at shows like this.

I hope to see many of you at the AmiEXPO...that is, I hope that many of you will be able to go, and I've already submitted *my* bribe to the boss, so I just *might* see you!

HOT NEWS!

Speaking of genlocks, AC will have some truly *Amazing* (pun intended) news for you next month. I don't mean to tease

you (much), but one of our fine video authors, Oran Sands V3.0, has discovered something that will be of real import to anyone owning, buying, or even thinking about a genlock. So make sure that you alert all of your AmigaVid friends to check out our April issue!

MEA CULPA

In January's issue I had written an animation tutorial for DeluxePaint III. It was intended for beginners, and there must be an awful lot of you out there, because the responses I got were *amazing* (no pun intended).

Most of you seemed to enjoy the tutorial, and just about everyone said that it was easy to follow (boy was I relieved!). But a few of you had problems, and I'm afraid that I have to admit it was my fault.

I got a few letters and several calls about the problem and I am busted. If you tried the tutorial as described and had a problem generating all the frames you probably don't have a new Fat Agnus and the accompanying 1 meg of chip RAM. In this case, DPaint III will not generate all of the frames.

MY APOLOGIES—MY FIX

My apologies. Once you have the new Fat Agnus and 1 meg of chip RAM you soon learn to take it for granted. It didn't even occur to me that this might be a problem in such a simple animation. Any of

you who experienced this problem now should understand why everyone's been clamoring for the extra chip RAM. My advice is, if you're not set up this way yet, do it! As soon as you possibly can. Personally, I've only been set up this way for three months and I can't wait until they break the 1 meg chip RAM barrier!

REDUCING THE NUMBER OF COLORS

For those of you who have only 512K of chip RAM, you can still do the tutorial if you reduce the number of colors to two. You may use black and white (or any two high-contrast colors of your choice).

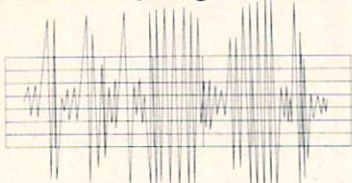
Try your name in white, outlined in black. Fill the box with a dithered range of black and white (with the pure white on top and black on the bottom). Outline the box in white, and then use a black background and the box will still stand out against the background. (See the diagram on the following page.) This will reduce the amount of memory required to an amount your machine can handle and you can still learn the basic use of the Move requester, which is what the tutorial was all about anyway!

DID YOU FORGET YOU WERE LOW ON MEMORY?

Remember too, that for *most* memory problems you may run into there will be a workaround. It will almost always involve either reducing the number of

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11231

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colors (and therefore bitplanes), reducing the resolution (less pixels will take less memory), or reducing or eliminating the overscan.

DON'T UNDERESTIMATE OVERSCAN

Remember, if you are thinking of eliminating overscan: you can only do it properly if *nothing* will be moving off of any part of the screen (top, bottom, either side) or onto the screen from these same directions.

This is the reason I didn't recommend eliminating overscan for this tutorial. It probably would have freed up

enough memory to use four colors, but your name would not have appeared from below the screen. It would have appeared, instead, from nowhere. About one-half to one inch above the edge of the screen, destroying the effect! (Try it if you don't believe me.)

LETTERS, I GET LETTERS!

On the down side (for me) I got my very first negative feedback in this month's mail. (I knew it was too good to be true!) A postcard from a Mr. Joseph Hayes lamented the fact that I had recommended watching Saturday morning cartoons for examples of animation (*Brushing Up On Animation*, AC V5.1).

Mr. Hayes says, "Mr. Solomon, have you watched cartoons lately? I would hope that the spectacular abilities of the Amiga would allow me to do better than the stilted work that passes for animation on Hanna-Barbera's morning shows! Barry, strive for excellence, don't emulate mediocrity."

Well, Mr. Hayes, I agree with you completely. In fact, that is basically what I wrote. I recommended watching the "current crop" of cartoons to learn "economical" (i.e., easy) animation techniques. I also stated that these current cartoons are "light-years away from the old Disney-type animation (or even Warner Bros.-type animation)". While I certainly do not hold up today's Saturday

morning cartoons as the epitome of the Animation art, I do absolutely contend that there is much that we would-be-animators can learn from them. I would also agree with you, Joseph, that it is better to aspire to the peak of the art! (And yes, I do watch Saturday morning cartoons. And, at last, even at my age, I have an excuse!) And one last word, just so I don't sound too pompous. While I agree with you ideologically, Joseph, let us not forget that Hanna-Barbera is a thriving, prosperous, professional animation company. They have been in business for many years, they make lots of money, and they also make lots of children (and adults!) very happy!

VIDEO FEEDBACK?

From all of you readers out there, please, I need a favor. Write to me. If you have questions, ask them. If you have comments (good or bad), give them. AC and I want to provide you with the video information you need, when you need it. And the bottom line is: *we need to know what you want!* Please write to me at AC, and let me know what kind of video articles, tutorials, and reviews you want to see. We'll do our very best to provide them for you! •AC•

Barry Solomon
Video Editor
c/o Amazing Computing for the
Commodore Amiga
P.O. Box 869
Fall River, MA 02722-0869

Black screen background

Dithered black and white inside box, outlined in white

White letters, outlined in black



I GOOFED! Here's the fix!

DO YOU KNOW IT ALL?

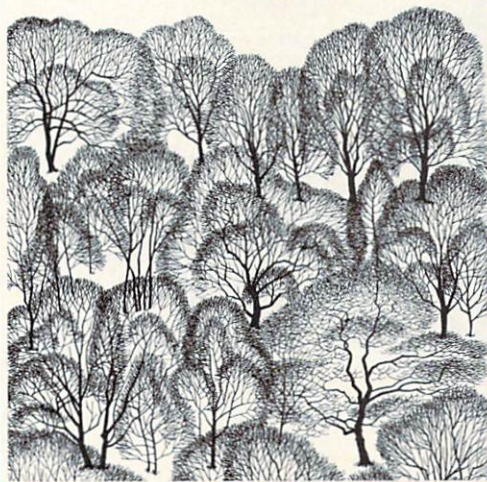
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Insight into the World of Freely Redistributable Software for the Amiga

by Chip Morrison

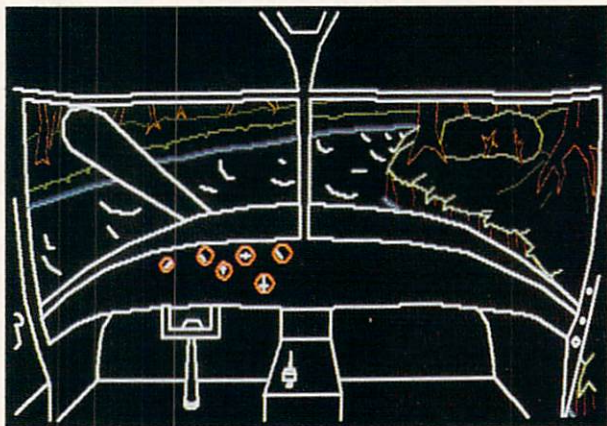
MandelMountains (Fred Fish Disk #295)

This program uses the standard Mandelbrot set to generate beautiful pictures. MandelMountains generates the standard Mandelbrot as the plateau of a mountain with smooth sides and valleys. Check out this picture! MandelMountains lets you choose many different parameters that will affect how your MandelMountain will look. You can adjust xmin, xmax, ymin, and ymax. These determine what part of the Mandelbrot set to draw. Depth changes the number of iterations. You can pick either linear or non-linear transformations. Color Min sets the number of iterations that a pixel will be drawn in a particular color. Color Div sets the step rate for the surface colors (those in the Mandelbrot itself). HZoom determines the height of the mountain and HSmooth determines the smoothness of the borders of the plateaus.

In addition to those options above, you can also select what size the screen will be. Either Small, Full, or Overscan which can all be either interlace or non-interlace. The Small is nice to test out new parameters, because it generates pictures the fastest.

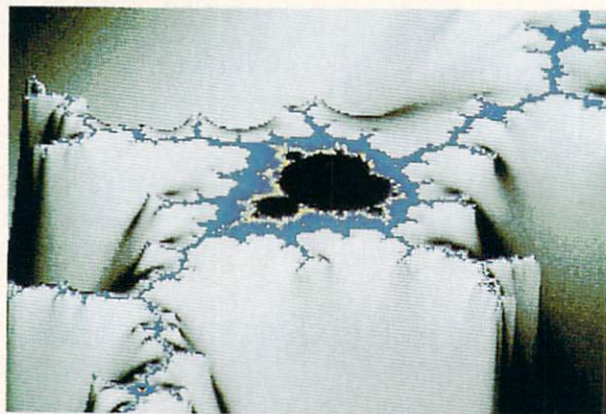
The Zoom option allows you to load in a previously generated picture and select a portion of it to enlarge. When you select the Zoom option a rectangle is shown that you move around with the mouse on the current picture until you get it over the area that you want. Then you click the left-mouse button, and the new parameters are captured and will be displayed. Now you can generate a picture with the new parameters or edit them by hand.

MandelMountains allows you to save and load in pictures. The pictures are saved in an IFF format that can be loaded into your favorite paint program. When you want to save or load a picture the file requester has a neat 'zoom open' effect. MandelMountains saves the parameter data within the IFF format so that you will have them to alter later. If you save the picture from within your paint program



Above: The adventure Jungle Quest produced with T.A.C.L.

Below: Mountain image generated with the MandelMountains program.



MandelMountains will be unable to read them. And paint programs do not need this data, so they overwrite it.

This is version 1.1 of MandelMountains. It supports both NTSC and PAL Amigas. It was written by Mathias Ortmann from West Germany and is shareware.

T.A.C.L. (Fred Fish #300)

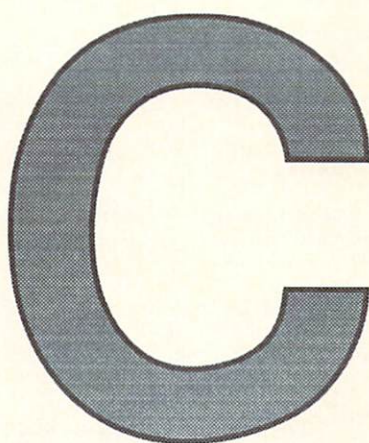
This disk has two sample adventures that were created with a commercial program called The Adventure Construction Language (T.A.C.L. pronounced 'tackle').

One of the adventures is all text and the other is both text and graphics. The text adventure is called Rescue. The other is called Jungle. Jungle has vector graphics that were created with a program called VGED (Vector Graphics Editor) which is included when you buy T.A.C.L. The vector graphics are nice, because they take up little space allowing you to put many on one disk with your adventure. T.A.C.L. also allows you to use IFFs including HAM from your favorite paint program.

PADV (Play Adventure) is the adventure player. It is freely distributable, so people can write adventures with T.A.C.L. and legally send PADV with it to their friends, BBSs, user groups, etc..

The disk includes the source to both adventures, so you can see what can be done with T.A.C.L. Both adventures are PD and were written by Rhett Rodewald and Kevin Kelm. T.A.C.L. was written by Kevin Kelm from Alternate Realities and is distributed by Micro Momentum, Inc.

•AC•



Notes

from the C Group

Variable arguments

by Stephen Kemp

Many C programmers avoid the attempt to write functions that accept a variable number of arguments. Indeed, I usually reconsider my options a number of times before taking up this task in a new program. Now I do not want to give the impression that functions with variable arguments are all that tough. But these functions usually require a little more careful coding (and thought) than other functions.

Of course, the first thing that needs to be considered is when you might need a function with this capability. Probably without really thinking about it you have already used a function that accepts a variable number of arguments dozens (if not hundreds) of times — the function `printf()`. In fact, all the “`printf`” and “`scanf`”-type functions all accept a variable number of arguments. When you consider the usefulness of these functions, it might remove some of the reluctance to attempt to write similar code yourself.

Using the `printf` function as an example, it is easy to understand a couple of very good reasons to use variable arguments. This function can output (and format) a string containing none, one, two, or dozens of arguments. Imagine the duplication of effort necessary if you needed a different function for each possible “number” of arguments that your program might require. So the first reason to write a variable parameter function would be to reduce code duplication.

Next, notice that not only does the `printf` function reduce code, it also has versatility. Not only can you have a variable number of arguments, but the arguments themselves can be of any type. You can print integers, doubles, character strings, etc., and you can receive these in any order you require. This versatility is not always implied when you write a variable parameter function, yet should not be overlooked as a possible reason to mimic what you have seen. This is the second reason you might consider writing a variable parameter function.

What are the drawbacks to such functions? Well, they probably are not as bad as you might at first believe. First, at least

one “extra” parameter is usually required in each call to such a function. There are a variety of shapes and forms that this extra parameter might take. Usually, it will either appear first in the function call list (indicating a variable count and/or types) or will occur last in the variable list (some special “flag” that indicates the end of the variable list has been reached).

This extra parameter is usually the most crucial. You have probably realized that in `printf()`, the first parameter is the extra parameter — a string that can contain format instructions like `%s`, `%n`, `%g`, etc. It requires this parameter not only to determine the number of arguments but also the types of each argument. NOTE: the `printf` function does overcome this first drawback by also making the first parameter more functional, since it can also include more than format information. This means that it is not really an extra parameter in this case.

A second drawback occurs for prototyping. Since this function can have any number of arguments, a compiler that recognizes prototypes cannot tell you when you have referenced the function with an incorrect number (or types) of parameters. The same is true for lint programs that examine prototypes. Preventing prototype detection means that you have to do your own verification (and debugging if necessary).

Another drawback involves how you retrieve the parameters. In common functions you simply indicate the names of all the parameters and then reference them directly. In a variable list (especially one that can mix and match variable types), it becomes more difficult to reference the variables. You won't have a specific name for each one. Rather, you will have to devise some indexing method from the beginning of the list to reach the individual parameters.

Any other drawbacks are no worse than those possible in any other function. If the function expects more or fewer parameters than it receives, things are likely to fail — and could be disastrous. Likewise, if the function is passed the wrong type of parameters, then incorrect values will be used — again leading

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to a potentially terrible fate. Perhaps, in the long run, you may find these hazards are more likely to occur in a variable argument function, but I have not found this to be the case.

Now that you know a little about what you are getting into, let's look at an example. Listing One is a very simple program that illustrates one method for receiving multiple parameters. This program has a function that will print a variable number of short integers that are passed to it.

Listing One

```

/* This simple program demonstrates one method to retrieve a
variable */
/* number of arguments in a function */

#include <stdio.h>
main() /* program start */
{
    var_func(1,2,3,0);
    var_func(5,0);
    var_func(9,8,7,6,5,4,3,2,1,0);
}

/* This function appears to accept a single parameter, yet
takes this */
/* parameters address and then indexes to subsequent parameters
until */
/* a zero parameter is reached indicating the end of the chain.

```

```

*/
/* Note that although this function does accept a variable
number of */
/* arguments, it expects that all of them are short integers.
*/

var_func(start)
short start;
{
    short *parm; /* parameter pointer */

    parm = &start; /* take the address of the
parameter */

    /* passed on the stack */
    for(; *parm != 0; parm++){ /* stop when zero parameter
reached */
        printf("%d", *parm); /* print current value */
    }
    printf("\r\n"); /* print a closing cr/lf sequence
*/
}

```

The important thing to know about a variable parameter function is the method it uses to determine the number of arguments it should expect. Earlier we used the printf function as an example. Printf determines the number of parameters by examining the percent (%) flags contained in the leading parameter. The printf function also has the additional overhead of determining how much space each of the parameters takes on the stack. This is derived from the type indicators applied to the flags.

Listing One's example doesn't have to worry about different variable types since all the parameters are expected to be short integers. As explained in the function description, the count of variables is not determined prior to processing. The function knows to stop when a parameter with a zero value occurs. We could have included the count as the first parameter, and then this function would also be able to print zero values.

The next important thing to notice about a function with variable arguments is how the arguments are reached. This example was the simplest method that I could invent. Since parameters are passed on a stack, I know that I can take the address of the first parameter, and then begin indexing from there to reach the subsequent values. The example uses a short integer pointer to hold the address since only shorts are expected.

If multiple parameter types are expected, then it may be more important to use a void pointer (or even a character pointer) and then cast the pointer each time you wish to retrieve a value. Indexing to the next parameter is as simple as adding the size of (sizeof) the previous parameter type. Of course, if different parameter types are expected, then you will also require a method to "know" the type of each parameter. Either the function will know because of a previous parameter or it will require some indicator like the function printf uses (%s, %d, etc.) in the first value.

As stated, it is usually difficult to decide that a variable number of arguments will solve any particular problem. You have to weigh the advantages and disadvantages. Sometimes the greatest disadvantage is that you do not have as much experience with these types of functions, so give this example a try on your own. After you have become familiar with it, go back and modify it. Change it to accept a count as the first parameter so that you can print zeros. Then change it to use a character string (your parameter will become a pointer to a pointer). You can learn a lot from experimentation.

•AC•

Music Titler

“Multi-media” is a buzzword you have probably heard a lot of lately.

Its meaning involves the combination of several media forms linked together usually by computer. It is a word that comes to my mind when thinking of recording music, instead of video, to a VCR. For those of us lucky enough to have a Hi-Fi VCR, we



• have a tool that can be used to record up to 6 hours of continuous music on a T-120 tape (VHS).

Up to 8 hours can be recorded on a T-160 tape!

N o w that's a lot of music! Because of the way that Hi-Fi is recorded on the tape (with the video signal), the quality does not suffer at the Extended Play mode as it does with a non-Hi-Fi VCR. In fact, the sound quality is superior to audio cassette and is comparable to Compact Disc! Having a six or eight hour “audio” tape has its advantages. It can be used to play background music for parties or for just relaxing for hours on end, all without having to mess with changing albums.

With most great things come drawbacks, and when using a VCR to record music, there are several. First, there is no room on the label to log six hours of songs – a second sheet of paper

will have to be used, or you may just settle for listing only the names of the albums. Second, finding a particular song is very difficult as you basically have to play a “hit-or-miss” game using the STOP, REWIND, FORWARD, and PLAY buttons on the VCR (very slow and clunky when compared to audio cassette). Also, if you don't have a complete play list of the songs on a tape, then the only way you can find a particular song is by knowing the order they are in, or by sheer luck (or by listening to the whole tape). But then there is that buzzword: multi-media. By taking advantage of the up-to-now unused portion of the VCR tape (video), the albums and songs can be listed in a meaningful and helpful manner. That is where the program MusicT comes in. By connecting your Amiga to the video input of VCR and running MusicT, the and song information is onto videotape along with the

The MusicT program displays the albums and tracks for each album on the screen in shades of grey (this can be changed if desired). Color is not used since the quality of the composite output of an Amiga 1000 is not that great and the composite output of the Amiga 500's and 2000's are only black and white. The album and track information is obtained from an ASCII



y o u r
a l b u m
r e c o r d e d
a c t u a l m u s i c .

(continued)

file that you create. The current album and current song from that album are both highlighted in reverse-video. There are two different timers displayed on the screen. One is the elapsed time of the current track; the other is the total elapsed time of all the tracks of the current albums that have played. When the track timer is used, the next track is automatically highlighted once the current track time has been reached. Once the last track of the current album is over, then the next album is highlighted and its songs are displayed.

Once you have created a music tape using MusicT, you have an instant reference as to what album and song are playing and the other selections on the tape. If you want to hear a particular song, finding it is a lot easier as you can use the VCR's Forward and Reverse Search features. By watching the current album and song selected and the time information, you can quickly zero in on the song or album desired.

ENTERING THE PROGRAM

Enter the program shown in Listing One and save it as 'MusicT.c'. The program was written using Manx Aztec C version 3.6a. Lattice users may have to make changes to get it to work. The following items can be changed to customize the program to suit your tastes:

Colors -The Red Blue Green components of the 8-color palette are defined in the 'Colors[]' array. The following constants define what color each of the different display elements will be:

ALBUMSCLR	- Albums shown
BKGRNDCLR	- Background
LABELSCLR	- Track/album labels and border
TIMERSCLR	- Track and album timers
TRACKSCLR	- Tracks shown

Location -The following constants define where the different screen elements will appear:

ALBMTMCOL	- Starting column of album timer
COLSIZE	- Size of columns in pixels
ROWSIZE	- Size of rows in pixels
STRALBM	- First Row for album list
STRTRK	- First Row for track list
TMLIN	- Row containing track/album times
TRKNCOL	- Column of track number
TRKSHWN	- Number of tracks shown at once
TRKTMCOL	- Starting column of track timer

Limits -The following constants define the limits of the program:

MXALBMS	- Maximum number of albums
MXFILES	- Maximum number of files to read
MXTRKS	- Maximum number of tracks per album

To compile and link the program, use the following commands:

```
cc +L MusicT
ln MusicT -lc32
```

RUNNING THE PROGRAM

MusicT is executed from the CLI. The basic format is:

```
MusicT <option ...> file <file ...>
```

where 'option' is one of the following options (each must be preceded with a dash '-')

- k - use keyboard commands to change tracks instead of timer.
- p - pause after each track (but use timer for each track) until any key is pressed.
- t - display album times and grand total times only.

'file' is the name of a file containing the following album/track text entries (all must start in the first column):

A text	- Album name
B value	- Track timer bias (optional)
T text (mm:ss)	- Track name with time (time is optional)

Any other entries will be ignored. An example album/track data file is shown in Listing Two.

The first valid entry must be an album name, otherwise the program will abort. More than one album may be listed in a file. Once an album entry is encountered, all subsequent entries are attributed to that album until another album entry is found.

The bias entry is optional. It indicates a positive or negative time bias (in seconds) to be added to, or subtracted from (in the form of a delay), the track timer at the start of each new track. It is useful if there is a significant delay between tracks (typically a couple of seconds). A negative value will cause the timer to delay (countdown) for specified number of seconds. A positive value will cause the timer to skip the specified number of seconds. The latter will probably never be needed, but it's available. Only one bias value is used for each album (i.e., each track cannot have a different bias).

In order for the track timers to work properly, the track time must be specified at the end of a track name in the format: '(mm:ss)', where 'mm' are minutes and 'ss' are seconds. This is the usual format that track times are shown on an album. Since both the minutes and seconds are combined internally to be total seconds, each can be as high as 99 and still be valid. This was done since some albums are longer than one hour in length but not more than an hour and a half. If the format of the track time is incorrect or missing for even just one track entry, then the automatic track-switching feature is disabled immediately.

As each data file is being read (you can specify more than one), the album being read and its total play time are shown. Once

(continued on page 75)

OMNI-PLAY BASKETBALL

Well, sports fans, has SportTime™ got a basketball game for you. This is a joystick controlled simulation for the serious basketball fan. Not only are you in control of the players down on the floor of the SportTime Garden, but you are also in control of coaching and the head office.

The basic theme behind the game is the creation of a basketball dynasty. You take your expansion team, make player trades, recruit new players, finish seasons and help your team advance to a championship.

SETTING UP YOUR TEAM

When you initially join the league (begin a new team in a new league), you get to choose in which division and conference you wish to compete. Once this choice is made, you may attend training camp for the first time. Training camp is only held once per season, and it costs "trading" points to attend camp. The more trading points you use, the more your team will improve during training camp.

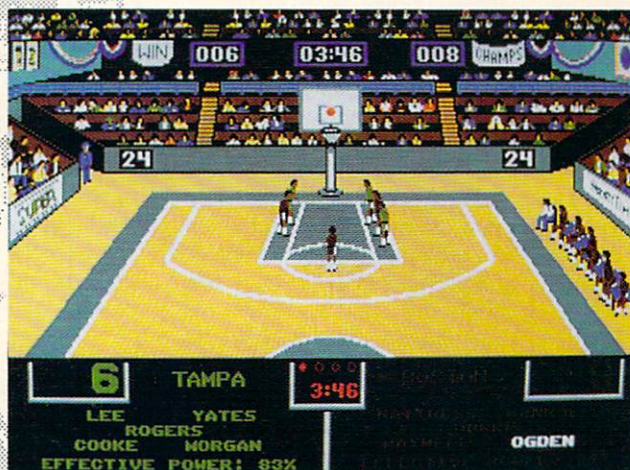
Each team begins the first season of a new league with the same amount of trading points. Further points are awarded depending on where a team finishes in the league standings. The poorer your team's performance that season (i.e., the more your team needs improvement), the more trading points are awarded. As previously mentioned, these points can be used to improve your team, but they are also used when recruiting new players (when another player retires or is just a bad player) and when trading a player to another team.

Training camp is used to improve the individual skills of all the players on your team. These skills are the player's "inside" (I) playing ability, "outside" (O) playing ability,

"control" (C), and "speed" (S). However, only two of the four skills can be improved during a single training camp. You can improve either a player's inside or outside ability and either his control or speed. You cannot improve both inside and outside skills at the same time, nor it is possible to improve both control and speed skills during the same training session.

The skills are basically straight-forward. A player's inside skill obviously refers to a player's ability to play in the paint and the immediate area under the basket, while a player's outside skill refers to his ability to play a perimeter game. Control and speed skills are as you would expect. The better the control skill, the better a player can control the ball. If a player has a high speed skill, obviously that player is very fast. Each skill is ranked from 0 to 9, with 0 being the lowest possible ranking and 9 being the highest.

Another way to improve your team is to recruit a new player. However, this should only be done when a player on your team is old and injury-prone, because a newly recruited player can have a



A Boston player at the line, attempting to make a free throw.



An example of the humor that can be expected during the Nick and Bob Show.

maximum total of only 10 skill points in all four categories while an older, more experienced player can have as many as 36 total points. Therefore, retiring a player and recruiting a new player should only be done when absolutely necessary. More often than not, it will be much more convenient to trade an aging player, to another team needing more experience, for a skillful younger player.

When attempting a trade, you are not guaranteed success. There is a 50 point arbitration fee that is required before a trade can occur. Additional points will also be required, depending on the number of points you have available, to further increase your bargaining power with the other team. Once these points have been entered, you are given a percentage rating on how successful the trade may be. The closer the percentage is to 100%, the better your chances are at a successful trade. However, if you feel the trading odds are not in your favor, you can back out of the deal and only lose 25 of the initial 50 trading

points which were required to begin the arbitration; all of the other trading points will be returned to your totals. Don't let these figures panic you—I had a successful trade with a preliminary success rating of only 19%, so sometimes it pays to be daring. On the other hand, failure is also quit easy. I had another trade fall through with a 78% success figure. My best advice is to live for the moment!

The game is set up for frequent trading, and it is advisable to trade often. Any trading points accumulated over 2000 are lost, so use 'em if you have 'em. Trading is also a valuable way of quickly improving a young expansion team. One word of warning: be careful not to use all of your trading points up during training camp.

ON THE COURT

When it comes down to actually playing the game on the court, you have the opportunity to either play, coach, or do both. If you desire, you can let the computer control one or all of these options for you. I suggest doing everything for yourself. I am not accusing anyone of anything here, but some of the play and coaching calls of the computer tend to be a bit on the controversial side. I would rather have no one to blame but myself.

Coaching is as much fun as playing. Trying to catch the computer or the other player in a bad defense or offense, while not letting him catch you making mistakes, is like playing a mini-chess game in between playing breaks.

As the coach, you are in total control of the game plan, play selection and player selection. You will learn to play rivaling teams effectively, exploiting each team's weaknesses while protecting your own. You will learn when to make your players press the other team and when to protect against the fast break. You will also acquire the necessary familiarity with your own team, such as which players are your starters and which players belong in the doghouse.

Once you have made all of your coaching decisions, it is time to play basketball. On the court the players are controlled with the joystick through a game feature called Flow-Control™. Unlike other basketball simulations, this feature was designed to let you control all of your players at the same time, allowing them to act more like a team.

On offense, passing and shooting are controlled by the joystick. But your shot selection is controlled by the computer. The Amiga will automatically choose what type of shot your player is attempting

depending on his position on the court, the position of the defender, and the movement of the shooting player. On defense, all possible actions (rebounding, shot blocking, ball stealing, double teaming, and fouling) are also controlled by the joystick.

A four-way joystick (or one adjustable to four positions) is highly recommended for this game, because diagonal movements are not necessary for gameplay. And most diagonal pass attempts usually lead to turnovers. However, on the whole, the joystick works well with the game.

THE NICK AND BOB SHOW

The Nick "the Net" Jones and "Basketball" Bob Smith Show is a semi-humorous analysis of the game. They usually give a pre-game and half-time show, but one or both can be bypassed if you are not interested in their analyses. However, if you can withstand some of the relatively boring and poor jokes that are randomly thrown into their dialogue, you can obtain some solid advice and information about the team you are playing.

TECHNICAL FOULS

There is nothing about this game that I really did not like, but there are a few things that need improvement. The Flow-Control™ feature can cause some major headaches. It does what it was intended to do, the only problem is that it does not do it quite well enough. There are too many situations that can occur during a game where Flow-Control™ leaves you helpless. For example, if the other team makes a successful outlet pass on the fast break, and you do not have the same player back on defense (if the opposing right guard is breaking, you need your right guard back on defense), the breaking player can drive unmolested to the basket for a lay-up or slam. Even if your other players are back on defense, nine times out of ten, the breaking player will still drive successfully to the basket.

Another example is when your team is caught in the wrong defense. When your team is in a "protect the inside" defense and the opposing team is in an "outside" offense, it is very difficult to make one of your players release from the zone to challenge an opposing player attempting an outside shot. Therefore, you either have to call a time out and change your defense, or you have to wait for the next break in play and hope the opposing team has poor outside shooters.

My last gripe is not directed at any part of the game, but more toward the designers. I understand the process of paying your dues, building up your team, and gaining experience, but my record after nine (five game) seasons is 7-37-1. It seems that every time I am going into the final minutes of a close game the opposing teams players can do no wrong, while my players cannot do anything right. Now as much as I love good competition, I also love to win and hate to lose. And it seems that unless I am going into the fourth period with a fifteen or more point lead, I end up losing the game in a heartbreaker. Therefore, I have had a love hate relationship with Omni-Play Basketball since Day One. I hate to believe that I am that bad at the game, yet I have not had a winning season. It just seems that the computer controlled opponent always has the advantage over my team. I don't know—maybe I just need a little more practice.

WHAT CAN YOU EXPECT

Now that I have stopped complaining, what can you expect from Omni-Play Basketball? You can look forward to a well thought out basketball simulation which is expandable into college and pro leagues. The game comes with a professionally written manual that describes the game well. It's lots of fun to play, but expect some frustrating losses. Oh well, that makes winning that much more fun.

The game options are excellent, The Nick and Bob Show is different, and the Flow-Control feature leaves a lot to be desired. It can easily be installed on a hard drive. But all that really counts is whether or not the game is fun to play. And this one is. If you are a basketball fan, I highly recommend Omni-Play Basketball. It is the type of sport simulation that keeps you coming back for more.

•AC•



Screen Aid

A quick remedy to prolong the life of your monitor.

I'm sure that most of you have heard of screen saver programs. They are the programs that sit quietly in the background, and when no activity takes place for a given period of time, they either make the screen go blank or draw random patterns on it. The screen then remains in that mode until a key or mouse button is pressed, when it springs back to the normal display. The purpose, of course, is to save the screen from having the current display being "burnt" into it, thereby saving yourself much anguish.

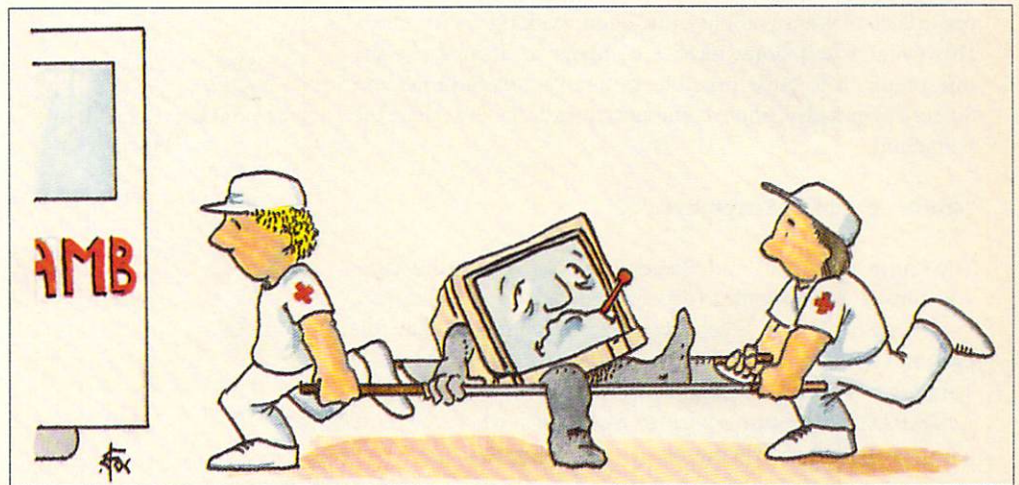
The public domain is a great source for such programs, but if you don't already have one, the small program presented here may be of interest to you. This is a manual "Screen Saver" program: In other words, you must invoke it directly. Once that is done, it performs the aforementioned function. The screen will go blank, and a small box containing a pattern will be drawn at random locations in random colors every two seconds, blanking the screen between scenes. It will keep doing this until either a key or the left mouse button is pressed.

A screen saver is ideal when you know you are going to be away from your Amiga for a while, but you don't want to turn it off! If you compile the program with one of the available AmigaBASIC compilers—Listing One contains recommended compile time options for Absoft's AC/BASIC—and place it in either the root or "c" directories of your Workbench disk, it will be readily available to you.

HOW DO WE MAKE A SCREEN BLANK?

The obvious answer to this question is simply to turn it black! But stop for a moment and think about what this involves. We must turn the edge of the screen (blue by default) black; we have to turn the screen border (white by default)

black; we must turn the working part of the screen (under user control, but blue by default) black; and finally we must turn the mouse pointer (black, red, and tan by default) black. If we know which palettes are used to control these areas, we can



just set them all to black, and we will have a blank screen. This is exactly what we'll do!

THE PALETTES INVOLVED

OK, the palettes we are interested in are:

Screen Edge	Palette 0
Screen Border	Palette 1
Working Screen	User Choice, Palette 0 by default
Pointer Red	Palette 17
Pointer Black	Palette 18
Pointer Tan	Palette 19

If we just set all these palettes to black, we'll have two problems. First, when the program terminates, we must reset all the palettes; otherwise, the screen will remain black, and we will have no way of knowing what those colors were! Second, we must have a screen with a depth of at least five, in order

(continued)

for AmigaBASIC to allow us access to palettes 17 through 19. Fortunately, we can address both problems with one answer. We just have to establish a custom screen with a depth of five, and then open a full-size window with no title, drag-bar, or gadgets. This will give us access to all necessary palettes (which we then set to black), and will cause the system to reset all palettes automatically when the window and screen are closed. Remember, color settings are peculiar to individual screens, so when a screen is closed, colors will automatically revert to those defined for the previous (now current) screen.

THE SCREEN BLANKER PROGRAM

Type in and save the short program shown in Listing One. Now try running it. If you have typed it in correctly, the screen will turn black, and a randomly colored box containing the defined pattern will appear at random locations on the screen at two-second intervals. It will keep doing this until you press either a key or the left mouse button, returning things to normal.

This program should be compiled and saved on a disk that is usually at hand, such as your Workbench disk. It can then be invoked quickly and easily, via CLI or Workbench, regardless of what you have just been working on (or with). However, if you don't have a compiler and must use the interpreter, it is quite possible to invoke AmigaBASIC and ScreenSaver with a single command from a CLI. Just issue the command:

```
"<run> amigabasic ScreenSaver"
```

The <run> is optional, and "ScreenSaver" represents the name you chose for the program (do not omit the quotation marks!).

One final note: If you use the interpreter to execute this program, you may wish to consider replacing the END statement with a SYSTEM statement. This will terminate AmigaBASIC and return control to Workbench when you press a key or the left mouse button.

THE PATTERN

As you may already know, patterns must be defined with a width of 16 pixels and depth which is a power of two (16, in this instance). In fact, the pattern used here isn't really a pattern at all; it is a small box containing a short message. Now, you may also know, when an area is filled with a pattern, the system repeats the pattern as often as is necessary to fill the defined area, which is why some form of repeating pattern is always recommended. (This applies to LINE, AREA FILL, and PAINT commands.)

As it turns out, however, the pattern does not originate in the specified area, but in the upper left-hand corner of the current window. This means that you will not always see a clear representation of the pattern, but only the portion of the window being drawn in. Nevertheless, the results are interesting and worth leaving as is—particularly with this program. (If you are interested in reading more about patterns, I discussed them at some length in an article entitled "BASIC Patterns," AC, V2.9, p. 76.)

THE PROGRAM ITSELF

The program is simple, short, and straightforward, as evidenced by Listing One. In fact, only one instruction per line is used, along with an almost excessive number of comments for clarity. I would suggest that you not include all the comments when entering the program (except, of course, for the copyright notice, etc.); just use them for reading and understanding the program.

Now there should no longer be any need for you to turn off your Amiga while you are away from it for an hour or two!

```
' "ScreenSaver" - An AmigaBasic Utility Program
'
' "ScreenSaver" was written for Amazing Computing
' Magazine by Bryan D. Catley in May 1989
'
' Copyright (c) 1989 by Feline Systems.
' All rights reserved.
'
' Suggested Compile Time Options for Absoft's AC/BASIC
' compiler are N, U, and T; (R is optional).
'
DIM flasher%(15),normal%(15)
FOR n=0 TO 15 ' fill pattern arrays
  READ flasher%(n) ' ... read pattern value
  normal%(n)=&HFFFF ' ... set solid pattern value
NEXT
DATA &HFFFF,&H8001,&HA2BD,&HAB69
DATA &HBFE9,&H9569,&H8201,&H8281
DATA &H83C1,&H8081,&H8241,&H8241
DATA &H8241,&H8181,&H8001,&HFFFF
RANDOMIZE TIMER ' initialize random numbers
SCREEN 2,320,200,5,1 ' open custom 32 color screen
WINDOW 2,,,0,2 ' ... and a window to go with it
PALETTE 0,0,0,0 ' change background color to black
PALETTE 1,0,0,0 ' change border color to black
PALETTE 17,0,0,0 ' change pointer
PALETTE 18,0,0,0 ' colors
PALETTE 19,0,0,0 ' to black
COLOR ,0:CLS ' clear screen to black
PATTERN ,flasher% ' set flashing pattern
MustFlash=-1 ' keep flashing
WHILE MustFlash ' ... while true
  fg=INT(RND*31) ' get random foreground color
  bg=INT(RND*31) ' get random background color
  x=INT(RND*288) ' get random x coordinate
  y=INT(RND*168) ' get random y coordinate
  COLOR fg,bg ' set colors just found
  LINE(x,y)-STEP(31,31),,bf ' draw patterned rectangle
  delay%=TIMER ' get current time
  WHILE TIMER<delay%+2:WEND ' wait two seconds
  COLOR ,0:CLS ' clear screen to black
  IF INKEY$<>"" OR MOUSE(0)<>0 THEN MustFlash=0
WEND ' repeat till activity
PATTERN ,normal% ' restore solid pattern
WINDOW CLOSE 2 ' close window
SCREEN CLOSE 2 ' close screen and revert to prior
colors
SYSTEM ' terminate program
```

•AC•

(Music Titrer, continued from page 70)

all albums have been read in, the music titles screen is set up and the first five albums and up to the first 15 tracks of the first album are shown. At this point and at the start of each subsequent album, you must press any key on the keyboard to start the timers. This gives you time to start/stop the VCR or prepare the next album. Once you press a key, the track and album timers start.

During the tracking process there are several keyboard commands available that affect the display:

Keyboard Commands

- R** -restarts the timer for current track. If the timer should start too early for a track, you can effectively re-sync it with this command.
- P** -pauses the timers until another key is pressed.
- N** -causes the program to switch to the next track of the album if there are any.
- L** -causes the program to switch to the previous track in case you hit the 'N' key too many times.
- esc** -the 'escape' key causes the program to quit.

If there are more than five albums or 15 tracks for an album loaded, then the album or track list will scroll once the current selection has reached the middle of the displayed list.

Once the last track of the last album has completed, the program will wait for another key to be pressed before quitting the program.

In addition to recording complete albums to videotape, you can also record individual songs by setting up the music file such that there is either one or several individual songs for each album listed. You can also specify a group of individual songs to be an 'album' (e.g., Love Songs, Party Songs, etc.). To give yourself time to start the next song in a group, either specify the option '-p' to pause after each track or option '-k' to use keyboard commands exclusively when running the program.

CONCLUSION

They say, "Multimedia is the wave of the future." With the help of the Amiga computer and programs like MusicT, that "future" gets a little bit closer. That's a future I'm looking forward to!

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Listing One

/*

MusicT

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This program generates a titler display to accompany the audio on a VCR recording. The title information is obtained from a data file containing the following entries:

```
A albumname <name length <= 40>
B bias <optional>
T track1 (mm:ss) <name/time length <=40>
T track2 (mm:ss)
.
.
T track-n (mm:ss)
A nextalbum
.
.
```

The maximum number of albums that can be loaded is limited by the constant MXALBMS and the maximum number of tracks per album is limited by the constant MXTRKS. All of the tracks following an album definition will be listed

(continued)

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under that album. The bias indicates a positive or negative time bias (in seconds) to be added or subtracted (in form of a delay) to/from the track timer at the start of each new track. This will accommodate track-to-track delays that vary between each album. Trial and error may be necessary to determine the bias (if any) necessary.

The track timer will control the changing of tracks only if the track time is specified at the end of each track in the data file. The format is "(mm:ss)" where mm are minutes and ss are seconds. Both the minutes and seconds can be greater than 59 (up to 99).

When the track timers do not control the switching of tracks (due to missing time or if option -k is specified) then the tracks can be switched by using the keyboard commands:

N - next track
L - last track
R - restart track timer (timer still updates)
P - pause timers (another keypress resumes)
esc - quit program

These commands will also work when the timer is used to control track switching.

Any key must be pressed to start the timers at the beginning of each album. A key must also be pressed at the end of the last album to cause the program to exit.

*/

```
#include "intuition/intuition.h"
#include "exec/exec.h"
```

```
#include "graphics/gfxmacros.h"
#include "stdio.h"
```

```
/* Screen Parameters */
```

```
#define ALBMSHWN 5
/* Number of albums shown on screen */
#define ALBMTMCOL 30
/* Starting column of current album time */
#define ALBUMSCLR 6
/* Color of albums shown */
#define BKGRNDCLR 0
/* Background color */
```

```
#define BORDERBTM TMLIN*ROWSIZE+4
/* bottom border of time box */
#define BORDERTOP TMLIN*ROWSIZE-12
/* top border of time box */
```

```
#define COLSIZE 8
/* Width of screen column in pixels */
#define LABELSCLR 4
/* Color of track/album labels and border */
#define ROWSIZE 8
/* Height of screen row in pixels */
#define STRTALBM 3
/* Starting screen row for album list */
#define STRTRK 17
/* Starting screen row for track list */
#define TIMERSCLR 5
/* Color of track and album time */
#define TMLIN 14
/* Row containing Track & Album times */
#define TRACKSCLR 6
/* Color of tracks shown */
#define TRKNCOL 7
/* Starting column of current track number */
#define TRKSHWN 15
/* Number of tracks shown on screen */
#define TRKTMCOL 12
/* Starting column of current track time */
#define TTLW 40
/* Titles width */
#define WNDWHGHT 400
/* Height of window in pixels */
#define WNDWDTH 320
/* Width of window in pixels */
```

```
/* Program Limits */
```

```
#define ESCCHR 27
/* Escape character */
#define MAXFILE 80
/* Maximum size of data line read in */
#define MXALBMS 20
/* Maximum number of albums */
#define MXFILES 20
/* Maximum number of files to read */
#define MXTRKS 30
/* Maximum number of tracks per album */
#define TIME SIZE 10
/* Size of time format: 'hh:mm:ss' */
```

```
/* Album Selection */
```

```
#define SELALBUM 1
#define NOSELALBUM 2
```

```
/* Track Selection */
```

```
#define SELTRACK 1
/* Show selected track when updating tracks */
#define NOSELTRACK 2
/* Don't show selected track when updating */
#define NOSHOWTRK 3
/* Don't show any tracks when updating */
```

```
/* "Show_Titles" States */
```

```
#define NEWALBUM 1
/* Start next album */
#define ALBUMKEY 2
/* Wait for keypress on new album */
#define NEWTRACK 3
/* Start next track */
#define TRACKKEY 4
/* Wait for keypress on new track */
#define INITIALTME 5
/* Set initial time (base on bias value) */
#define RESETTRACKTIMER 6
/* Set track timer to initial time */
#define ONTRACK 7
/* Currently tracking song */
#define ONTRACKPAUSE 8
/* Pause timers - resume on keypress */
#define SCROLLTRACK 9
/* Determine need to scroll tracks */
```



```

#define SCROLLBACKTRACK 10
/* Determine need to scroll back tracks */
#define SCROLLALBUM 11
/* Determine need to scroll albums */
#define LASTALBUM 12
/* All done - wait for keypress */

/* Global variables */

char AlbmTtl[MXALBMS][TTLW+1];
char Blanks[TTLW+1] = " ";
BOOL ChkTm = TRUE;
int Colors[8][3] =
{
    0, 0, 0,
    1, 1, 1,
    2, 2, 2,
    3, 3, 3,
    5, 5, 5,
    7, 7, 7,
    9, 9, 9,
    11, 11, 11
};

int CrntAlbm;
int CrntTrk;
struct DiskfontBase *DiskfontBase;
long ESeconds = 0;
char *FileName [ MXFILES ];
char *Font = "topaz.font";
int FrstAlbm;
int FrstTrk;
struct GfxBase *GfxBase;
struct IntuitionBase *IntuitionBase;
int LstAlbm = -1;
USHORT *MTPointer;
struct Screen *MTScreen;
struct TextFont *MTFont;
struct Window *MTWindow;
int NbrFiles;
int NTrks [ MXALBMS ];
BOOL PrnTtls = FALSE;
int TmBias [ MXALBMS ];
BOOL TrkPaus = FALSE;
char TrkTtl [ MXALBMS ][ MXTRKS ][ TTLW+1 ];
int TrkTm [ MXALBMS ][ MXTRKS ];

main( argc, argv)

int argc;
char *argv[];
{
    BOOL Get_Album_Info();
    APTR OpenLibrary();
    BOOL Set_Up_Screen();
    int x;

    /* Open the world!!! */

    DiskfontBase = (struct DiskfontBase *)OpenLibrary("diskfont.library",0);
    if (DiskfontBase != NULL)
    {
        GfxBase = (struct GfxBase *)OpenLibrary("graphics.library",0);
        if (GfxBase != NULL)
        {
            IntuitionBase = (struct IntuitionBase *)OpenLibrary("intuition.library",0);
            if (IntuitionBase != NULL)
            {
                if ( argc<2 )
                {
                    /* Print standard format */

                    printf("\n FORMAT: %s <option ...> file\n", argv[0] );
                    printf("<file ...>\n", argv[0] );
                    printf("Where:\n");
                    printf("option: \n");
                    printf("  -k = use keyboard commands to\n");
                    printf("change tracks instead of timer\n");
                    printf("  -p = pause after each track\n");
                    printf("  (but use timer for each track)\n");
                    printf("  -t = display album and set\n");
                    printf("times only\n");
                    printf("  file = name of file containing\n");
                    printf("album/track text entries\n");
                    printf("  A text\n");
                    printf("  (Album - up to 40 characters)\n");
                    printf("  B value\n");
                    printf("  (Time Bias)\n");
                }
            }
        }
    }
}

```

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```

printf("
(if value<0 subtract from timer)\n");
printf("
(if value>0 add to timer)\n");
printf("      T text (mm:ss)
(Track - up to 40 characters)\n\n");
}
else
{
    NbrFiles = 0;

    /* Extract options and file names */

    for (x=1;x<argc; x++)
    {
        if (argv[x][0] == '-')
        {
            switch (argv[x][1])
            {
                case 'k':
                    /* Don't check times */
                    ChkTm = FALSE;
                    break;
                case 'p':
                    /* Pause after each track */
                    TrkPaus = TRUE;
                    break;
                case 't':
                    /* Display totals only */
                    PrnTtls = TRUE;
                    break;
                default:
                    printf("Invalid option '%c' entered.\n",argv[x][1]);
            }
        }
        else
        {
            FileName[NbrFiles++] = argv[x];
        }
    }
    if (NbrFiles == 0)
    {
        printf("You must specify a text file\n");
    }
}
}

```

(continued)



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```

    }
    else
    {

/* Get Album Information from specified file(s) */

        if (Get_Album_Info() && !PrnTtl)
        {

/* Display titles if info present and optioned */

            if (Set_Up_Screen())
            {
                Show_Titles();
                Close_Out_Screen();
            }
        }

        }
        CloseLibrary(IntuitionBase);
        }
        CloseLibrary(GfxBase);
        }
        CloseLibrary(DiskfontBase);
    }
}

/*

Get Album Info
This routine reads the specified file(s), extracts the album,
track, and timer bias information. It also computes and prints
total time for each album (including any bias) and the total
time for all albums listed.

*/

BOOL Get_Album_Info()
{
    long AlbumTotal;
    char Buffer[MAXFILE+1];
    char *fgets();

```

```

    BOOL FirstTrack;
    FILE *fopen();
    long GrandTotal;
    char L [ TTLW+1 ];
    char *lineptr;
    FILE *list;
    long minutes;
    BOOL NotNew;
    long seconds;
    char *strcpy();
    int t;
    char tbuf[TIME_SIZE];
    BOOL GoForIt;
    int x;

    LstAlbm = -1;
    GoForIt = FALSE;
    AlbumTotal = 0;
    GrandTotal = 0;
    for (x = 0; x < NbrFiles; x++)
    {
        list = fopen( FileName[x], "r" );
        if ( list == 0 )
        {
            printf("\nCan't open list file: %s.\n", FileName[x]);
        }
        else
        {
            printf("\nExtracting data from file %s. \n\n", FileName[x]);
            NotNew = FALSE;
            while ( fgets( Buffer, MAXFILE, list ) != 0 )
            {

                /* Replace 'newline' character with null */

                Buffer[strlen(Buffer)-1] = '\0';

                /* Shorten line if too long */

                Buffer[TTLW+2] = '\0';
                switch ( Buffer[0] )
                {
                    case 'A': /* Extract Album Title */

                        /* Print total time for previous album */

                        if (NotNew && ChkTm)
                        {
                            Format_Time(AlbumTotal,tbuf);
                            printf(" time: %s.\n",tbuf);
                        }
                        else
                        {
                            printf("\n");
                        }
                    }

                    /* Process new album */

                    NotNew = TRUE;
                    GrandTotal += AlbumTotal;
                    AlbumTotal = 0;
                    LstAlbm = LstAlbm + 1;
                    TmBias[ LstAlbm ] = 0;
                    NTrks[LstAlbm] = -1;
                    FirstTrack = TRUE;
                    strncpy(L,&Buffer[2],TTLW+1);
                    printf("Processing album '%s'...",L);

                    /* Center text as required */

                    if (strlen(L) < TTLW)
                    {
                        strncpy(AlbmTtl[LstAlbm],Blanks,(TTLW-strlen(L))/2);
                        strncat(AlbmTtl[LstAlbm],L,strlen(L));
                        strncat(AlbmTtl[LstAlbm],Blanks,(TTLW-strlen(L)+1)/2);
                    }
                    else
                    {
                        strncpy(AlbmTtl[LstAlbm],L,strlen(L));
                    }
                    break;

                    case 'B': /* Extract Track Time Bias */

                        /* Make sure an album has been defined first! */

                        if (LstAlbm < 0)
                        {
                            printf("\nMust specify album name before Bias command!\n");
                        }
                        else
                        {
                            sscanf( &Buffer[2],"%d",&TmBias[LstAlbm]);
                        }
                    }
                }
            }
        }
    }

```

(continued on page 82)

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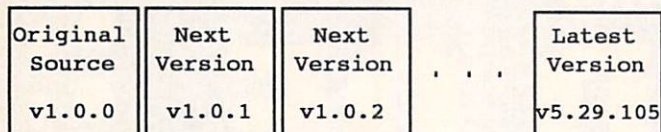
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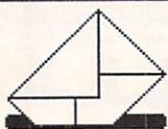
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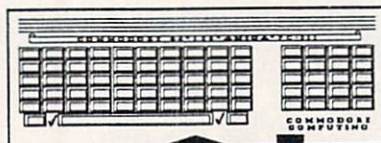
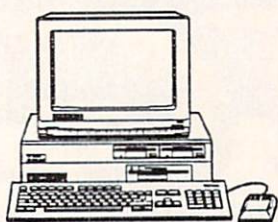
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Circle 107 on Reader Service card.

(Music Titrer, continued from page 78)

```
break;

case 'T': /* Extract Track Title */

/* Make sure album has been defined first! */

if (LstAlbm < 0)
{
printf("\nMust specify album name before Track command!\n");
}
else
{
GoForIt = TRUE;
NTrks[LstAlbm]++;

/* Extract time if checking times */

if (ChkTm)
{
t = strlen(Buffer) - 7;
if (t < 0)
{
printf("\nMissing or invalid time - Disabling Auto-Track\n");
ChkTm = FALSE;
}
else if (Buffer[t] != '(' ||
Buffer[t+3] != ':' ||
Buffer[t+6] != ')')
{
printf("\nMissing or invalid time - Disabling Auto-Track\n");
ChkTm = FALSE;
}
else
{
sscanf(&Buffer[t+1], "%2ld", &minutes);
sscanf(&Buffer[t+4], "%2ld", &seconds);
}

TrkTm [LstAlbm] [ NTrks[LstAlbm]] = minutes * 60 + seconds;

AlbumTotal += TrkTm [LstAlbm] [ NTrks[LstAlbm] ];
```

```
if (!FirstTrack) AlbumTotal -= TmBias[LstAlbm];
FirstTrack = FALSE;
}
}
strncpy(L, &Buffer[2], TTLW+1);

/* Center title if less than maximum size */

if (strlen(L) < TTLW)
{
strncpy(TrkTtl[LstAlbm] [NTrks[LstAlbm]], Blanks, (TTLW-
strlen(L))/2);

strncat(TrkTtl[LstAlbm] [NTrks[LstAlbm]], L, strlen(L));

strncat(TrkTtl[LstAlbm] [NTrks[LstAlbm]], Blanks, (TTLW-
strlen(L)+1)/2);
}
else
{
strncpy(TrkTtl[LstAlbm] [NTrks[LstAlbm]], L, strlen(L));
}
break;

} /* end switch */

} /* end while */

fclose( list );

/* Print total time of last album and for complete set */

if (ChkTm)
{
Format Time(AlbumTotal, tbuf);
printf(" time: %s.\n", tbuf);
GrandTotal += AlbumTotal;
Format Time(GrandTotal, tbuf);
printf("\nGrand Total: %s.\n", tbuf);
}
else
{
printf("\n");
}

} /* end else */

} /* end for */

if (!GoForIt)
printf("File(s) must contain album/track entries\n");

return(GoForIt);
}

/*

Set Up Screen

This routine creates a screen and window to display the
specified albums and tracks.

*/

BOOL Set_Up_Screen()
{
APTR AllocMem();
BOOL GoForIt;
char *Name;
struct TextAttr NA;
struct NewScreen NS;
struct NewWindow NW;
struct TextFont *OpenDiskFont();
struct Screen *OpenScreen();
struct Window *OpenWindow();
int x;

GoForIt = FALSE;

/* Create a screen */

NS.LeftEdge = 0;
NS.TopEdge = 0;
NS.Width = WNDWDWTH;
NS.Height = WNDWHGHT;
NS.Depth = 3;
NS.DetailPen = 0;
NS.BlockPen = 0;
NS.ViewModes = LACE;
NS.Type = WBENCHSCREEN;
NS.Font = NULL;
NS.DefaultTitle = NULL;
NS.Gadgets = NULL;
NS.CustomBitMap = NULL;
```


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Circle 103 on Reader Service card.

Close_Out_Screen()

```
{
    SetFont(MTWindow->RPort, NULL);
    if (MTFont != NULL)
    {
        CloseFont(MTFont);
    }
}
```

```
CloseWindow(MTWindow);
CloseScreen(MTScreen);
}
```

```
/*
```

Show Titles

This routine displays the albums and track titles and performs selection of tracks and albums based on timers and/or keyboard commands.

```
*/
```

Show_Titles()

```
{
    long AlbmElaps;
    long AlbmTmr;
    long Elapsed;
    APTR GetMsg();
    struct IntuiMessage *IM;
    long IntlTmr;
    char Key;
    int Mode;
    BOOL Quit;
    long TrkElaps;
    char TrkTime[TIME_SIZE];
    long TrkTmr;
}
```

```
Mode = NEWALBUM;
FrstAlbm = 0;
CrntAlbm = -1;
Quit = FALSE;
```

```
MTScreen = OpenScreen(&NS);
if (MTScreen != NULL)
{
    /* Create a window for new screen */

    NW.LeftEdge = 0;
    NW.TopEdge = 0;
    NW.Width = WNDWDTH;
    NW.Height = WNDWHGHT;
    NW.DetailPen = 0;
    NW.BlockPen = 0;
    NW.IDCMPFlags = VANILLAKEY | INTUITICKS | WINDOWACTIVE;
    NW.Flags = SMART_REFRESH | BORDERLESS | ACTIVATE |
        NOCAREREFRESH | RMBTRAP;
    NW.FirstGadget = NULL;
    NW.CheckMark = NULL;
    NW.Title = NULL;
    NW.Screen = MTScreen;
    NW.BitMap = NULL;
    NW.MinWidth = WNDWDTH;
    NW.MinHeight = WNDWHGHT;
    NW.MaxWidth = WNDWDTH;
    NW.MaxHeight = WNDWHGHT;
    NW.Type = CUSTOMSCREEN;

    MTWindow = OpenWindow(&NW);
    if (MTWindow != NULL)
    {
        GoForIt = TRUE;

        /* Open larger font (topaz 11) */

        NA.ta_Name = Font;
        NA.ta_YSize = 11;
        NA.ta_Style = 0;
        NA.ta_Flags = NULL;

        MTFont = OpenDiskFont(&NA);
        if (MTFont != NULL)
        {
            SetFont(MTWindow->RPort, MTFont);
        }

        /* Define Color Palette */

        for (x=0; x<8; x++)
            SetRGB4(&MTScreen->ViewPort, x, Colors[x][0],
                Colors[x][1], Colors[x][2]);

        /* Make mouse pointer invisible */

        OFF_SPRITE;

        /* Clear and set up display */

        SetDrMd(MTWindow->RPort, JAM2);
        SetAPen(MTWindow->RPort, LABELSCLR);
        SetBPen(MTWindow->RPort, BKGNDCLR);
        ClearScreen(MTWindow->RPort);
        Move(MTWindow->RPort, 0L, TMLIN*ROWSIZE);

        Text(MTWindow->RPort, "Track: - Album:", 30L);

        Move(MTWindow->RPort, 0L, BORDERTOP);
        Draw(MTWindow->RPort, WNDWDTH-1, BORDERTOP);
        Draw(MTWindow->RPort, WNDWDTH-1, BORDERBTM);
        Draw(MTWindow->RPort, 0L, BORDERBTM);
        Draw(MTWindow->RPort, 0L, BORDERTOP);

        Move(MTWindow->RPort, 0L, BORDERTOP+1);
        Draw(MTWindow->RPort, WNDWDTH-1, BORDERTOP+1);
        Move(MTWindow->RPort, 0L, BORDERBTM-1);
        Draw(MTWindow->RPort, WNDWDTH-1, BORDERBTM-1);

    }
    else
    {
        printf("Can't open window!!!\n");
        CloseScreen(MTScreen);
    }
    else
    {
        printf("Can't open screen!!!\n");
    }
    return(GoForIt);
}

/*

Close Out Screen

This routine closes the larger font (if opened), resets the
mouse pointer, and closes the created window and screen.

*/
```

(continued)



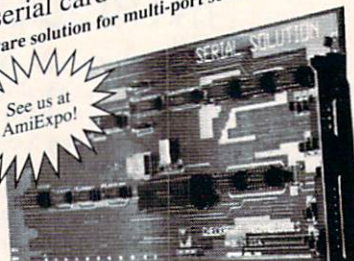
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Circle 141 on Reader Service card.

```
/* Top of main loop */
while (!Quit)
{
    Key = NULL;

    /* Check answering service for messages */

    IM = (struct IntuiMessage *)GetMsg(MTWindow->UserPort);
    if (IM != NULL)
    {
        switch(IM->Class)
        {
            case INTUITICKS:
                /* Update master timer */
                ESeconds = IM->Seconds;
                break;

            case VANILLAKEY:
                /* Process keypress */
                Key = IM->Code;
                if (Key == ESCCHR) Quit = TRUE;
                break;

            case WINDOWACTIVE:
                /* Make mouse pointer disappear */
                OFF_SPRITE;
                ReplyMsg(IM);
        }
        switch (Mode)
        {
            case NEWALBUM:
                /* Start next album */
                CrntAlbm++;
                if (CrntAlbm > LstAlbm)
                {
                    Update Albums(NOSELALBUM);
                    UpdateTracks(NOSHOWTRK);
                    Mode = LASTALBUM;
                }
            else
            {
                Update Albums(SELALBUM);
                CrntTrk = 0;
                CrntTrk = -1;
                UpdateTracks(NOSELTRACK);
                Mode = ALBUMKEY;
            }
            break;

            case ALBUMKEY:
                /* Wait for keypress on new album */
                if (Key != NULL)
                {
                    Mode = NEWTRACK;
                    AlbmTmr = ESeconds;
                }
            break;

            case NEWTRACK:
                /* Start next track */
                CrntTrk++;
                if (CrntTrk > NTrks[CrntAlbm])
                {
                    Mode = SCROLLALBUM;
                }
            else
            {
                UpdateTracks(SELTRACK);
                if (TrkPaus)
                {
                    AlbmElaps = ESeconds - AlbmTmr;
                    Mode = TRACKKEY;
                }
            }
            else
            {
                Mode = INITIALTIME;
            }
        }
        break;

            case TRACKKEY:
                /* Wait for keypress on new track */
                if (Key != NULL)
                {
                    AlbmTmr = ESeconds - AlbmElaps;
                    Mode = INITIALTIME;
                }
            }
        break;

            case INITIALTIME:
                /* Set initial time (based on album bias value) */
                IntlTm = 0;
                if (CrntTrk != 0 && TmBias[CrntAlbm] != 0)
                {
                    IntlTm = TmBias[CrntAlbm];
                    Mode = RESETTRACKTIMER;
                }
            else
            {
                Mode = RESETTRACKTIMER;
            }
        }
        break;

            case RESETTRACKTIMER:
                /* Set track timer to initial time */
                TrkTmr = ESeconds - IntlTm;
                UpdateTracks(SELTRACK);
                Mode = ONTRACK;
                break;

            case ONTRACK:
                /* Currently tracking song */
                if (Key != NULL)
                {
                    /* Process key commands */
                    switch(Key)
                    {
                        case 'n':
                            /* Next track */
                            Mode = SCROLLTRACK;
                            break;

                        case 'l':
                            /* Last track */
                            CrntTrk -= 2;
                            if (CrntTrk < -1) CrntTrk = -1;
                    }
                }
            }
        }
    }
}
```

```
Update Albums(SELALBUM);
CrntTrk = 0;
CrntTrk = -1;
UpdateTracks(NOSELTRACK);
Mode = ALBUMKEY;
}
break;

case ALBUMKEY:
/* Wait for keypress on new album */
if (Key != NULL)
{
    Mode = NEWTRACK;
    AlbmTmr = ESeconds;
}
break;

case NEWTRACK:
/* Start next track */
CrntTrk++;
if (CrntTrk > NTrks[CrntAlbm])
{
    Mode = SCROLLALBUM;
}
else
{
    UpdateTracks(SELTRACK);
    if (TrkPaus)
    {
        AlbmElaps = ESeconds - AlbmTmr;
        Mode = TRACKKEY;
    }
}
else
{
    Mode = INITIALTIME;
}
}
break;

case TRACKKEY:
/* Wait for keypress on new track */
if (Key != NULL)
{
    AlbmTmr = ESeconds - AlbmElaps;
    Mode = INITIALTIME;
}
}
break;

case INITIALTIME:
/* Set initial time (based on album bias value) */
IntlTm = 0;
if (CrntTrk != 0 && TmBias[CrntAlbm] != 0)
{
    IntlTm = TmBias[CrntAlbm];
    Mode = RESETTRACKTIMER;
}
else
{
    Mode = RESETTRACKTIMER;
}
break;

case RESETTRACKTIMER:
/* Set track timer to initial time */
TrkTmr = ESeconds - IntlTm;
UpdateTracks(SELTRACK);
Mode = ONTRACK;
break;

case ONTRACK:
/* Currently tracking song */
if (Key != NULL)
{
    /* Process key commands */
    switch(Key)
    {
        case 'n':
            /* Next track */
            Mode = SCROLLTRACK;
            break;

        case 'l':
            /* Last track */
            CrntTrk -= 2;
            if (CrntTrk < -1) CrntTrk = -1;
    }
}
}
```


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Circle 121 on Reader Service card.

Update Albums

This routine updates the albums list on the screen. The current album is shown in reverse-video. The album list will scroll if there are more albums in list than are shown and middle album on screen has been reached.

*/

Update Albums (Select)

int Select;

```
{
    int C;
    int Row;
```

/* Reset Track/Album status line */

```
SetAPen( MTWindow->RPort, TIMERSCLR);
SetBPen( MTWindow->RPort, BKGRNDCLR);
SetDrMd( MTWindow->RPort, JAM2);
Move( MTWindow->RPort, TRKNCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, " 0", 3L);
Move( MTWindow->RPort, TRKTCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, " 00:00:00", TIME_SIZE-1);
Move( MTWindow->RPort, ALBMTCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, " 00:00:00", TIME_SIZE-1);
```

/* Update Album list */

```
C = FrstAlbm;
SetAPen( MTWindow->RPort, ALBUMSCLR);
for (Row = STRTALBM; Row <= STRTALBM +
    (ALBMSHWN-1)*2; Row+= 2)
{
    if (C == CrntAlbm && Select == SELALBUM)
    {
        SetDrMd( MTWindow->RPort, JAM2 | INVERSVID);
    }
    else
    {
        SetDrMd( MTWindow->RPort, JAM2);
    }
}
```

(continued)

```
Mode = SCROLLBACKTRACK;
break;

case 'p': /* Pause timers */
case 'P':

    TrkElaps = ESeconds - TrkTmr;
    AlbmElaps = ESeconds - AlbmTmr;
    Mode = ONTRACKPAUSE;
    break;

case 'r':
/* Restart track timer */
case 'R':

    TrkTmr = ESeconds;
    break;

}

/* Print Total Track Time */

TrkElaps = ESeconds - TrkTmr;
Format Time(TrkElaps, TrkTime);
SetAPen( MTWindow->RPort, TIMERSCLR);
SetBPen( MTWindow->RPort, BKGRNDCLR);
SetDrMd( MTWindow->RPort, JAM2);
Move( MTWindow->RPort, TRKTCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, TrkTime, TIME_SIZE-1);

/* Print Total Album Time */

Elapsed = ESeconds - AlbmTmr;
Format Time(Elapsed, TrkTime);
Move( MTWindow->
    >RPort, ALBMTCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, TrkTime, TIME_SIZE-1);

/* Check if track has completed (if checking time) */

if (ChkTm && (TrkElaps >=
    TrkTm[CrntAlbm][CrntTrk]))
    Mode = SCROLLTRACK;
break;

case ONTRACKPAUSE: /* Pause - resume on keypress */
if (Key != NULL)
{
    TrkTmr = ESeconds - TrkElaps;
    AlbmTmr = ESeconds - AlbmElaps;
    Mode = ONTRACK;
}
break;

case SCROLLTRACK: /* Need to scroll tracks? */

if (FrstTrk + (TRKSHWN-1) < NTrks[CrntAlbm])
if (CrntTrk >= (FrstTrk + TRKSHWN-1)/2)
    FrstTrk++;
Mode = NEWTRACK;
break;

case SCROLLBACKTRACK:
/* Need to scroll back tracks? */
if (FrstTrk > 0)
if (CrntTrk-1-FrstTrk < TRKSHWN/2)
    FrstTrk--;
Mode = NEWTRACK;
break;

case SCROLLALBUM:
/* Need to scroll albums? */
if (FrstAlbm + (ALBMSHWN-1) < LstAlbm)
if (CrntAlbm >= (FrstAlbm + ALBMSHWN-1)/2)
    FrstAlbm++;
Mode = NEWALBUM;
break;

case LASTALBUM:
/* All done - wait for keypress */
if (Key != NULL)
{
    Quit = TRUE;
}
} /* End switch() */

} /* End while */

/*
```


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Circle 146 on Reader Service card.

```

    }
    Move( MTWindow->RPort, 0L, Row*ROWSIZE);
    if (C <= LstAlbm)
    {
        Text( MTWindow->RPort, AlbmTtl[C], TTLW);
    }
    else
    {
        Text( MTWindow->RPort, Blanks, TTLW);
    }
    C = C + 1;
}

/*
Update Tracks

This routine updates the tracks list on the screen. The
current track is shown in reverse-video if Select is set to
SELTRAK. The tracks list is scrolled if there are more tracks
in the list that are not shown and the current track is in the
middle of the display.

*/

UpdateTracks(Select)
int Select;
{
    int C;
    int Row;
    int t;
    char tbuf[3];

    /* Reset Track Time in Track/Album status line */
    if (Select != NOSHOWN)
    {
        SetDrMd( MTWindow->RPort, JAM2);
        Move( MTWindow->RPort, TRKNCOL*COLSIZE, TMLIN*ROWSIZE);

```

```

t = CrntTrk + 1;
sprintf(tbuf, "%2.2d", t);
SetAPen( MTWindow->RPort, TIMERSCLR);
Text( MTWindow->RPort, tbuf, 3L);
Move( MTWindow->RPort, TRKNCOL*COLSIZE, TMLIN*ROWSIZE);
Text( MTWindow->RPort, " 00:00:00", TIME_SIZE-1);
}

/* Update Track list */

C = FrstTrk;
SetAPen( MTWindow->RPort, TRACKSCLR);
for (Row = STRTRK; Row <= STRTRK + (TRKSHWN-1)*2; Row+=2)
{
    if ((C == CrntTrk) && (Select == SELTRAK))
    {
        SetDrMd( MTWindow->RPort, JAM2 | INVERSVID);
    }
    else
    {
        SetDrMd( MTWindow->RPort, JAM2);
    }
    Move( MTWindow->RPort, 0L, Row*ROWSIZE);
    if (Select == NOSHOWN)
    {
        Text( MTWindow->RPort, Blanks, TTLW);
    }
    else if (C <= NTrks[CrntAlbm])
    {
        Text( MTWindow->RPort, TrkTtl[CrntAlbm][C], TTLW);
    }
    else
    {
        Text( MTWindow->RPort, Blanks, TTLW);
    }
    C = C + 1;
}
}

```

Listing Two

/*
Format Time
Copyright 1989 by Brian Zupke and PiM Publications, Inc.

This stand-alone subprogram converts a long integer seconds-of-day value into an ASCII string in the format "hh:mm:ss". The absolute value of SecondsOfDay must be from 0 (midnight) to 86399 (one second before midnight), otherwise the formatted time will be incorrect. A negative value for SecondsOfDay is valid. This happens when using a countdown timer. In this case, the negative sign ('-') will be the first character of the formatted time.

```

*/

Format_Time(SecondsOfDay, FmtedTime)

long SecondsOfDay;
char *FmtedTime;
{
    int Hours;
    int Minutes;
    int Seconds;
    char Sign;

    Sign = ' ';
    if (SecondsOfDay < 0L)
    {
        SecondsOfDay = -SecondsOfDay;
        Sign = '-';
    }
    Hours = SecondsOfDay/3600;
    SecondsOfDay = SecondsOfDay % 3600;
    Minutes = SecondsOfDay/60;
    Seconds = SecondsOfDay % 60;
    sprintf(FmtedTime, "%c%02.2d:%02.2d:%02.2d", Sign, Hours, Minutes, Seconds);
}

```

•AC•

(continued from page 62)

be fully compatible, usually because the developers broke a rule or two to get things to work a little better. It will be interesting to see how many pieces of software break when 1.4 is released. The Bandito hears that games are the most vulnerable, but some well-known productivity software may be in need of a quick fix, too.

Commodore's vertical market advertising push is kicking off in the first quarter. Insiders give the campaign good reviews for appearance and substance. What remains to be seen is how well it generates sales. Commodore is providing a stepped up campaign for dealer training, so that they can turn the sales leads into actual sales.

Oxxi has picked up the Aegis software line and has plans to create new versions of some of the products. This is good news for fans of the software. The Bandito hears that while Videoscape 3D has been picked up by Oxxi, you should not expect a new version from Allen Hastings. He is busy with his 3D animation software for NewTek, which should be on the market by the springtime. From the demos, it should offer some features that have never been seen before in Amiga animation.

The Bandito advises caution in the licensing game. One well-known Amiga company paid a pretty penny to acquire some Hollywood properties for a series of games, but the products are not doing very well. And the company still has to pay up the big advances for the license, even if the software never makes enough to cover the advance money. Oh well, the Bandito muses, that's life in the software business...

You may remember that the Bandito told you about a new external drive Commodore was developing? Well, it is here. Commodore is coming out with a new 3.5" floppy disk drive called the A1011. It is a sleek little drive that is priced to cut into the clone drive sales. It is about time, too. That A1010 looks awfully clunky. What do you think?

Disney (AKA Buena Vista Software) is shipping Leo Schwab's Onion program in February. For some reason, they have decided not to call it Onion but instead will bill it as The Animation Studio. Personally, the Bandito likes the flavor of Onion a bit better, but those marketroids would never countenance a name with such pungence. Can software make you cry? Just ask Leo about the amount of work he put into this

program. The Bandito will be disappointed if there is not at least one screen hack (a "schwabbie" to those In The Know) hidden somewhere in the program. Those who have seen the software are very impressed — a very slick interface designed the way animators work. The Bandito thinks the most fun part of the product is the clip art provided from the Disney library.

The Bandito predicts that the Amiga will emerge in the 1990s as the leader in the home computer market. If Commodore plays its cards right, the Amiga can be the big winner for the next five years. The Bandito recalls how the C64 got off to a slow start against the Apple II, and finally overtook it in the end. It was the growing software base and Tramiel's insistence on relentlessly slashing the price that made the difference. That is why the Bandito looks forward to a retail price of \$495 on the A500 this year. It is already being sold at close to \$500, but with a list price of \$495 you will be able to get it for under \$400. It may happen before the end of 1990. The A590 is an important part of the drive to make the A500 the leading home computer, making it easy and reasonably cost-effective to add a hard drive and extra memory to the A500.

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This is something that was always too difficult and expensive to do with previous home computers, if you could do it at all. And it makes the A500 a solid competitor to business computer systems, but with strengths in all the areas important to a home computer (graphics, animation, and sound).

One weak point in the Commodore strategy is hardware and software support. Many of the Amiga loyalists who have stuck with the Amiga from the start are running out of steam, and many have left the market (Byte-By-Byte is now putting all its energies into Macintosh software. Electronic Arts is concentrating on games. Aegis is sold.). Some are still doing well (NewTek, Gold Disk, Brown-Wagh), and there are some new companies that are growing fast (Hash Enterprises, for one). But Commodore realizes that the hardware and software is not being developed at the same pace as in previous years, and they are stepping up their developer support efforts. Commodore is seriously interested in investing money in developing key technologies for the Amiga. Hey, maybe they need to spend a few hundred thousand subsidizing a gossip columnist...

•AC•



AC Disks

Source code and executable programs included
for all articles printed in *Amazing Computing*.



This disk contains the source and executable code relating to articles in AC V3.8 and AC V3.9.

Gels In MultiForth Parts I & II: Learn how to use Gels in MultiForth. Author: John Bushakra

FFP & IEEE: An Example of using FFP & IEEE math routines in Modula-2. Author: Steve Faiwizewski

CAI: A complete Computer Aided Instruction program with editor written in AmigaBASIC. Author: Paul Castonguay

Tumblin' Tots: A complete game written in Assembly language. Save the falling babies in this game. Author: David Ashley

VGad: A gadget editor that allows you to easily create gadgets. The program then generates C code that you can use in your own programs. Author: Stephen Vermeulen

MenuEd: A menu editor that allows you to easily create menus. The program then generates C code that you can use in your own programs. Author: David Pehrson

Bspread: A powerful spread sheet program written in AmigaBASIC. Author: Brian Catley



This disk contains the source and executable code relating to articles in AC V4.3 and AC V4.4.

Fractals Part I: An introduction to the basics of fractals with examples in AmigaBASIC, True BASIC, and C. Author: Paul Castonguay

Shared Libraries: C source and executable code that shows the use of shared libraries. Author: John Baez

MultiSort: Sorting and intertask communication in Modula-2. Author: Steve Faiwizewski

Double Playfield: Shows how to use dual playfields in AmigaBASIC. Author: Robert D'Asto

'881 Math Part I: Programming the 68881 math coprocessor chip in C. Author: Read Predmore

Args: Passing arguments to an AmigaBASIC program from the CLI. Author: Brian Zupke



This disk contains the source and executable code relating to articles in AC V4.5 and AC V4.6.

Digitized Sound: Using the Audio device to play digitized sounds in Modula-2. Author: Len A. White

'881 Math Part II: Part II of programming the 68881 math coprocessor chip using a fractal sample. Author: Read Predmore

At Your Request: Using the system-supplied requestors from AmigaBASIC. Author: John F. Wiederhirn

Insta Sound: Tapping the Amiga's sound from AmigaBASIC using the Wave command. Author: Greg Stringfellow

MIDI Out: A MIDI program that you can expand upon. Written in C. Author: Br. Seraphim Winslow

Diskless Compiler: Setting up a compiler environment that doesn't need floppies. Author: Chuck Raudonis



This disk contains the source and executable code relating to articles in AC V4.7 and AC V4.8.

Fractals Part II: Part II on fractals and graphics on the Amiga in AmigaBASIC and True BASIC. Author: Paul Castonguay

Analog Joysticks: The code for using analog joysticks on the Amiga. Written in C. Author: David Kinzer

C Notes: A small program to search a file for a specific string in C. Author: Stephen Kemp

Better String Gadgets: How to tap the power of string gadgets in C. Author: John Bushakra

On Your Alert: Using the system's alerts from AmigaBASIC. Author: John F. Wiederhirn

Batch Files: Executing batch files from AmigaBASIC. Author: Mark Aydelotte

C Notes: The beginning of a utility program in C. Author: Stephen Kemp



This disk contains the source and executable code relating to articles in AC V4.9.

Memory Squares: Test your memory with this AmigaBASIC game. Author: Mike Morrison

High Octane Colors: Use dithering in AmigaBASIC to get the appearance of many more colors. Author: Robert D'Asto

Cell Animation: Using cell animation in Modula-2. Author: Nicholas Cirasella

Improving Graphics: Improve the way your program looks no matter what screen it opens on. In C. Author: Richard Martin

Gels in MultiForth-Part 3: The third and final part on using Gels in Forth. Author: John Bushakra

C Notes V4.9: Look at a simple utility program in C. Author: Stephen Kemp

ID_Cells: A program that simulates a one-dimensional cellular automata. Author: Russell Wallace

Colourscope: A shareware program that shows different graphic designs. Author: Russell Wallace

ShowILBM: A program that displays lo-res, hi-res, interlace and HAM IFF pictures. Author: Russell Wallace

Labyrinth II: Roll playing text adventure game. Author: Russell Wallace

Most: Text file reader that will display one or more files. The program will automatically format the text for you. Author: Russell Wallace

Terminator: A virus protection program. Author: Russell Wallace



This disk contains the source and executable code relating to articles in AC V4.10 & AC V4.11.

Typing Tutor: A program written in AmigaBASIC that will help you improve your typing. Author: Mike Morrison

Glat's Gadgets: Using gadgets in Assembly language. Author: Jeff Glat

Function Evaluator: A program that accepts mathematical functions and evaluates them. Written in C. Author: Randy Finch

Fractals: Part III: AmigaBASIC code that shows you how to save/load pictures to disk. Author: Paul Castonguay

More Requestors: Using system calls in AmigaBASIC to build requestors. Author: John Wiederhirn

MultiForth: Implementing the ARP library from Forth. Author: Lonnie A. Watson

Search Utility: A file search utility written in C. Author: Stephen Kemp

Fast Pics: Re-writing the pixel drawing routine in Assembly language for speed. Author: Scott Steinman

64 Colors: Using extra-half-brite mode in AmigaBASIC. Author: Bryan Catley

Fast Fractals: A fast fractal program written in C with Assembly language subroutines. Author: Hugo M. H. Lyppens

Multitasking in Fortran: All the hard work is done here so you can multitask in Fortran. Author: Jim Locker



This disk contains the source and executable code relating to articles in AC V4.12 & AC V5.1.

ARExx Part II: Information on how to set up your own ARExx programs with examples. Author: Steve Gilmor.

Leggo My LOGO: A Logo program that generates a Christmas tree with decorations. Author: Mike Morrison.

Trees and Recursion: An introduction to binary trees and how to use recursion. Written in C. Author: Forest Arnold.

C Notes: A look at two data compressing techniques in C. Author: Stephen Kemp.

Animation? BASICally: Using cell animation with AmigaBASIC. Author: Mike Morrison

Menu Builder: A utility to help build menus in your own programs. Written in C. Author: Tony Preston.

Dual Demo: How to use dual playfields to make your own arcade games. Written in C. Author: Thomas Eshelman.

Scanning the Screen: Part four in the fractals series. This article covers drawing to the screen. In AmigaBASIC and TrueBASIC. Author: Paul Castonguay.

C Notes: Recursive functions in C. Author: Stephen Kemp.



This disk contains the source and executable code relating to articles in AC V5.2 & AC V5.3.

Dynamic Memory!: Flexible string gadget requester using dynamic memory allocation. Author: Randy Finch.

Call Assembly language from BASIC: Add speed to your programs with Assembly. Author: Martin F. Combs.

Conundrum: An AmigaBASIC program that is a puzzle-like game. Author: Dave Senger.

Music Titrer: Generates a titler display to accompany the audio on a VCR recording. Author: Brian Zupke

C Notes From the C Group: Writing functions that accept a variable number of arguments. Author: Stephen Kemp

Screen Saver: A quick remedy to prolong the life of your monitor. Author: Bryan Catley

3D Computer Graphics: A User's Guide for Artists and Designers

I have been into computer graphics — particularly 3D — for several years now. So imagine my delight when I ran into this nifty book on computer graphics at my local mega-chain bookstore: *3D Computer Graphics: A User's Guide for Artists and Designers*.

I picked it up and casually thumbed through it...my wife had to buy it for me just to get me out of the store. Wow! What a book!

First of all, I should really make one thing clear: this is not a book about Amiga 3D graphics. This is a thorough discussion of the history and background of computer-generated 3D as well as its current use and application. The author is talking about the real thing. The stuff the "Big Boys" do. The kind of 3D graphics and animation done on the Crays and the Pixars and the Cubicoms.

Please don't think I'm putting down the Amiga. Personally, I'd say that the Third Edition of this book won't be complete without a chapter on the Amiga. This edition, however, is an examination of the highest-end computer 3D graphics available — the cutting edge of the art — which we Amigans are getting closer to every day!

"Why does this have anything at all to do with me and my Amiga?", you may ask. Well, even if you're a serious hobbyist (and certainly if you're an Amiga professional) there's a great deal to learn by watching the competition. And this book is the competition. Know thy Enemy! Besides, as I said, we're getting closer every day, and when we finally make it, I don't want to be a 3D illiterate. Personally, I think that as the Amiga (and its available 3D software base) continues to grow and change, this kind of information will be a necessity to us all.

The book begins with a discussion of the basic concepts of 3D graphics and the hardware used to generate them. It explains the concept of a scale model and

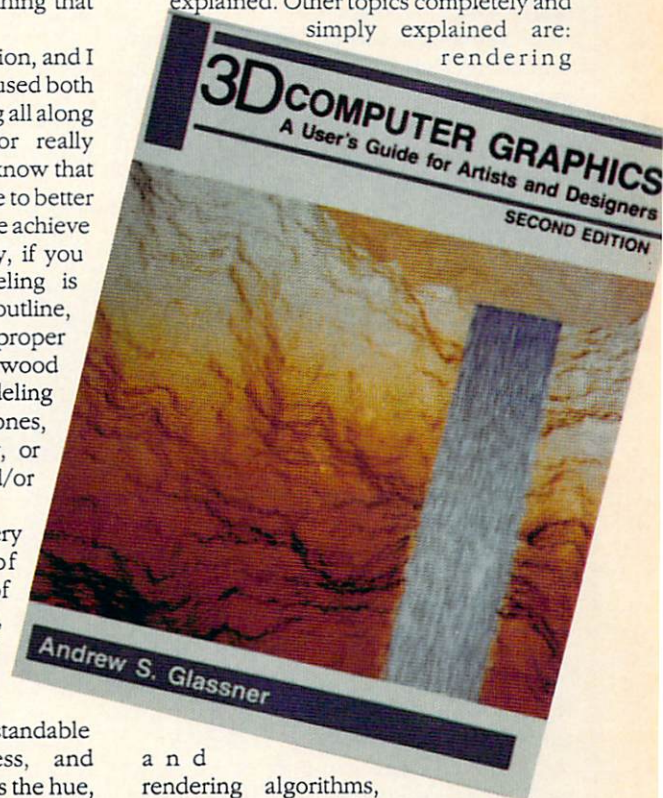
a mathematical model and the difference between them. Also discussed and contrasted are prepared and interactive modeling as well as subtractive and additive modeling. To illustrate his explanation of subtractive modeling, the author quotes the old story about the "elephant kit". That, of course, is the kit with everything you need to make an elephant. When you open it up you find a block of wood, a knife, and instructions telling you to carve away everything that doesn't look like an elephant!

I need this kind of information, and I enjoy this kind of writing. I have used both subtractive and additive modeling all along without knowing the terms or really thinking about the difference. I know that this new knowledge will allow me to better understand what I do, and help me achieve new points of view. By the way, if you didn't know, subtractive modeling is starting with a basic shape, or outline, and adjusting or "carving" the proper shape from it (like the block of wood and the elephant). Additive modeling is building objects from smaller ones, as you might build up a body, or robot, from a series of cubes and/or tubes.

Chapter Two brings us a very informative discussion of dimensionality. The idea of coordinate systems, vectors, angles, and even the basics of points and lines. Color is also discussed, and for beginners, there is a very easily understandable explanation of hue, lightness, and saturation-HLS (this is the same as the hue, saturation and value-HSV to which most Amiga graphics programs refer).

As this book is really aimed at artists and designers, the next chapter also discusses basic computer terms and configurations. From there it takes off and there isn't anything remotely relevant to

computer-generated 3D that isn't thoroughly discussed. Surface properties of materials, lighting, and shading, and specularities are covered. Polygons and polygonal models are explained. And, I must say, this book contains the best explanation of Gouraud and Phong shading that I've ever read. Textures and texture mapping are covered in detail, as are fractals. The use of trees (hierarchy and hierarchical systems) is also well-explained. Other topics completely and simply explained are: rendering



and rendering algorithms, animation, and production techniques.

The author of this book, one Andrew S. Glassner, holds a Ph.D. in Computer Science from the University of North Carolina at Chapel Hill. He has been active in computer graphics research for over ten years and as such has been involved with



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IBM, Bell Communications Research, PARC (the Xerox Palo Alto Research Center), the Delft University of Technology, and the New York Institute of Technology Computer Graphics Lab. If the book reads like he knows what he is talking about (it does), this is why!

If you think you're into computer 3D, then the 40+ color plates in this book will absolutely make you drool. If they don't, I'll eat my disks. I only wish they were larger. The book is also chock-full of black and white pictures and diagrams to illustrate the author's points.

As I've mentioned, this book is not written for computer fans; in fact, at no point does this book ever really assume any serious computer knowledge. It is very clearly written and easily understandable.

I've been using Turbo Silver and Sculpt-Animate 4D (and a few others) for some time now, and I've always wondered

how they (their developers) managed to come up with two entirely different approaches. There have even been many times when I have marvelled at each different method. I still find it completely amazing that we can define, create, and render three dimensions in terms of only two! I think reading this book and learning more about the generic fundamentals of 3D has really helped me to better understand the world of 3D graphics.

•AC•

3D Computer Graphics: A User's Guide for Artist and Designers, 2nd Edition

Andrew S. Glassner
Design Press
Division of TAB BOOKS Inc.
10 East 21 Street
New York, NY 10010
Price: \$26.95
Inquiry # 209

Many years back a friend turned me on to an album of synthesizer "music" by a gentleman named Morton Subotnik. I say "music" because the majority of the people I've played it for don't seem to think it is music. I do.

The album was created on a Buchla synthesizer about 20 years ago, long before you could buy a Muppet Babies keyboard (which is actually a synthesizer) at Toys 'R' Us. It is a collection of crashes, bangs, rumbles, grunts, groans, squeaks, tinkles, and more that just tickled my fancy as it had not often been tickled before. It was (and still is) one of my favorite albums.

It was several years after I first heard this incredible album before I finally realized what it was about this new sound that fascinated me so. Unreality. That's what it was and is. The fact that almost none of these "noises" were sounds that occurred naturally. Nor were they your usual man-made sounds.

Over the years I have collected and enjoyed some rather unusual synthesizer music. I like pretty much everything I've bought, but it's the oddball stuff—the outre, the avant-garde—that still tickles my imagination the most.

Don't get me wrong. It's great that my Korg, Roland, Yamaha, Casio, or Oberheim can "do" a violin that sounds just like the real thing. (It can make you a lot of money at weddings.) But the sounds that still get to me are the ones that are so different, so unnatural, that they couldn't have come from anywhere else but the inside of a little electronic box.

Do I digress from the topic of 3D computer graphics? Well, yes. But only a

little. I've been a big fan of computer graphics for several years now. The topic has become a profession with me as well as an obsession. The only difference between my love of synthesizer music and my love of computer graphics is that with the latter, I recognized the source of my passion immediately. It's the unreality of it.

Strange, bizarre 3D images. Objects that do not or cannot exist, rendered so cunningly that you're certain they are real. Or common, everyday items in improbable or even impossible contexts. This is what I really love.

3D or Not 3D...

Every day we are inundated with incredible computer graphics. Every channel on TV is filled with glass, marble, and chrome logos, which twist and turn and fly in every direction. It's almost become a little too commonplace. (Chrome Logos R Us?)

I never thought that I'd own a computer that could actually do real, three-dimensional, ray-traced graphics (much less animations). The Amiga is a remarkable beast. Truly.

A little over two years ago I began researching my Amiga. Always the aware consumer, I thoroughly checked out all of my options. There was a new Macintosh due out shortly. Of course, software might

be a problem for a while. (As far as 3D software goes, it still is.)

I found this truly professional 3D software package. All I would need to run it would be an IBM-compatible 386 and some pretty sophisticated video adapter cards. Still, the hardware would be several thousand dollars less than a Mac. The problem? I finally asked about the price of the software. "\$26,000," they answered. "Cash or charge?" By the way, I still try to keep up on what else there is on the market. At my request I recently received a brochure from one of the Phone Companies about a new software/hardware package (which actually included two computers—one controlling the other). Obviously, an incredible 3D/animation setup. And on sale! If I purchased it before January 1, 1990 (rats! too late!) it would only cost me ninety-nine five. That's right \$99,500!!

My need for the Amiga was obvious. Here I am, more than two years later and my obsession with 3D graphics (and the Amiga) is still going strong. Now there are a number of 3D modeling, rendering and animation programs available. The Caligari series, Turbo Silver, the Sculpt-Animate series, Videoscape, Forms in Flight, Design 3D, 3-Demon, C-Light, PageRender 3D, and more.

There are several 3D font packages, many 3D utilities, and a host of 3D clip-art-type packages. They vary in style and level of sophistication, but they all have one thing in common. They all bring the world of 3D graphics and/or animation within the reach of anyone with an Amiga and some imagination.

B.S.

The AMICUS & Fred Fish

Public Domain Software Library

This software is collected from user groups and electronic bulletin boards around the nation. Each Amicus disk is nearly full, and is fully accessible from the Workbench. If source code is provided for any program, then the executable version is also present. This means that you don't need the C compiler to run these programs. An exception is granted for those programs only of use to people who own a C compiler.

The Fred Fish disk are collected by Mr. Fred Fish, a good and active friend of the Amiga.

Note: Each description line below may include something like 'S-O-E-D', which stands for 'source, object file, executable and documentation'. Any combination of these letters indicates what forms of the program are present. Basic programs are presented entirely in source code format.

<p>AMICUS Disk 1</p> <p>ABasic programs: Graphics 3DSolids 3d solids modeling prog. w/sample data files Blocks draws blocks Cubes draws cubes Durer draws pictures in the style of Durer FScape draws fractal landscapes 3D drawing program, w/hidden line removal Hidden simple paint program JPAd draw several optical illusions Optical simple paint program PaintBox draws the Shuttle in 3d wireframe Shuttle graphics demo Speaker speech utility Sphere draws spheres Spiral draws color spirals ThreeDee 3d function plots Topography artificial topography Wheels draws circle graphics Xenos draws fractal planet landscapes</p> <p>ABasic programs: Tools AddressBook simple database program for addresses CardFile simple card file database program Demo shows keyboard demo KeyCodes shows keycodes for a key you press Menu run many ABasic programs from a menu MoreColors way to get more colors on the screen at once, using aliasing simple color shape designer Speakt speech and narrator demo</p> <p>ABasic programs: Games BrickOut classic computer brick wall game Ohno simple shoot-em-up game Saucer simple talking spelling game Spelling selectable graphics demo ToyBox</p> <p>ABasic programs: Sounds Entertainer plays that tune HAL5000 pretends it's a real computer Police simple police siren sound SugarPlum plays "The Dance of the Sugarplum Fairies"</p> <p>C programs: ATem simple terminal program, S-E decent aid to compiling with Lattice C dotc opposite of CONVERT for cross developers Dotc source code to the dotc window demo dotc unix-style filename expansion, partial S-O-D taster explains use of fast-floating point math FixDate fixes future dates on all files on a disk, S-E freedraw simple Workbench drawing prog., S-E GxMem graphic memory usage indicator, S-E Grep searches for a given string in a file with docs. ham shows off the hold-and-modify</p> <p>IBM2Amiga fast parallel cable transfers between an IBM and an Amiga</p> <p>Mandel Mandelbrot set program, S-E patterned graphic demo, S-E makes Lattice C object file symbols visible to Wack, S-E</p> <p>quick quick sort strings routine example sample window I/O turns on interface mode, S-E qx-type graphic demo, S-E</p> <p>Other executable programs: SpeechToy speech demonstration WhizFort displays all available fonts</p> <p>Texts: 68020 describes 68020 speedup board from CSA Aliases explains uses of the ASSIGN command known bug list in Lattice C 3.02 CLICLI guide to using the CLICLI CLICLI Commands shorter guide to AmigaDOS CLICLI commands EdCommands guide to the ED editor FileNames AmigaDOS filename wildcard conventions HalfBright explains rare graphics chips that can do more colors denotation of the serial port pinout RAMdisks tips on setting up your RAM: disk ROMWack tips on using ROMWack Sounds explanation of Instrument demo sound file format</p> <p>Speed reduction of Amiga's CPU and custom chip speed tips on using Wack</p> <p>WackCmnds</p> <p>AMICUS Disk 2</p> <p>C programs: aio AmigaDOS object library manager, S-E fixobj text file archive program, S-E sq auto-chops executable files sq, usq simple CUI shell, S-E YachtC file compression programs, S-E YachtC a familiar game, S-E Make a simple 'make' programming utility, S-E Emacs an early version of the Amiga text editor, S-E-D</p> <p>Assembler programs: bssearch binary search code qsort.asm Unix compatible qsort() function, source and C test program setjmp.asm setjmp() code for Lattice 3.02 SVprint Unix style Unix compatible print() function, O-D trees (This disk formerly had IFF specification files and examples. Since this spec is constantly updated, the IFF spec files have been moved to their own disk in the AMICUS collection.)</p> <p>John Draper Amiga Tutorials: Animate describes animation algorithms Gadgets tutorial on gadgets Menus learn about intuition menus</p>	<p>AMICUS Disk 3</p> <p>C programs: Xiel a C cross-reference gen., S-E Ezcolor extra-half-bright chip, gdx demo, S-E Chop truncate (chop) files down to size, S-E Cleanup removes strange characters from text files CRZLF converts carriage returns to line feeds in Amiga files, S-E Error adds compile errors to a C file, S-E Hello window ex. from the RKM, S Kermit generic Kermit implementation, flakey, no terminal mode, S-E Scales sound demo plays scales, S-E SkewB Rubik cube demo in hi-res colors, S-E</p> <p>AmigaBasicProgs(dlr) Automata cellular automata simulation CrazyEight card game Graph function graphing programs WitchingHour a game</p> <p>ABasic programs: Casino games of poker, blackjack, dice, and craps Gomoku also known as 'othello' Sabotage sort of an adventure game</p> <p>Executable programs: Disassembler a 68000 disassembler, E-D DpSlide shows a given set of IFF pictures, E-D Arrange a text formatting program, E-D</p> <p>Assembler programs: Argoterm terminal program with speech and Xmodem, S-E</p> <p>AMICUS Disk 4</p> <p>Technical BBS Note that some of these files are old, and refer to older versions of the operating system. These files came from the Sun system that served as Amiga technical support HQ for most of 1985. These files do not carry a warranty, and are for educational purposes only. Of course, that's not to say they don't work.</p> <p>Complete and nearly up-to-date C source to 'image ed', an early version of the Icon Editor. This is a little flakey, but compiles and runs.</p> <p>An intuition demo, in full C source, including files: demomenu.c, demomenu2.c, demoreq.c, getascii.c, idemo.c, idemo2.c, idemo3.c, idemo4.c, idemo5.c, idemo6.c, idemo7.c, idemo8.c, idemo9.c, idemo10.c, idemo11.c, idemo12.c, idemo13.c, idemo14.c, idemo15.c, idemo16.c, idemo17.c, idemo18.c, idemo19.c, idemo20.c, idemo21.c, idemo22.c, idemo23.c, idemo24.c, idemo25.c, idemo26.c, idemo27.c, idemo28.c, idemo29.c, idemo30.c, idemo31.c, idemo32.c, idemo33.c, idemo34.c, idemo35.c, idemo36.c, idemo37.c, idemo38.c, idemo39.c, idemo40.c, idemo41.c, idemo42.c, idemo43.c, idemo44.c, idemo45.c, idemo46.c, idemo47.c, idemo48.c, idemo49.c, idemo50.c, idemo51.c, idemo52.c, idemo53.c, idemo54.c, idemo55.c, idemo56.c, idemo57.c, idemo58.c, idemo59.c, idemo60.c, idemo61.c, idemo62.c, idemo63.c, idemo64.c, idemo65.c, idemo66.c, idemo67.c, idemo68.c, idemo69.c, idemo70.c, idemo71.c, idemo72.c, idemo73.c, idemo74.c, idemo75.c, idemo76.c, idemo77.c, 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Where can you find all the
Fred Fish Collection, as well as the
Amicus Disks and The AC Disks,
cross referenced and fully listed?

AC's GUIDE AMIGA

AC's Guide lists the descriptions and
contents of over 330
Freely Distributable Software
disks as well as

over 2400 Amiga products.

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AMICUS Disk 13

Amiga Basic programs
Routines from Carolyn Schoepner of CBM Tech Support, to read and
display IFF pictures from Amiga Basic. With documentation. Also
included is a program to do screen prints in Amiga Basic, and the
newest BMAP files, with a corrected ConvertFD program. With ex-
ample pictures, and the SaveLBM screen capture program.

Routines to load and play FutureSound and IFF sound files from
Amiga Basic, by John Foust for Applied Visions. With documenta-
tion and C and assembler source for writing your own libraries, and
interfacing C to assembler in libraries. With example sound.

Executable programs
gravity
Sci Amer Jan 96 gravitation graphic
simulation, S-E-D

Texts
MIDI
make your own MIDI instrument interface,
documentation & a H-res schematic.

AMICUS Disk 14

Several programs from Amazing Computing issues:

Tools
Dan Kary's
C structure index program, S-E-D
Amiga Basic programs:
BMAP Reader
by Tim Jones
IFFBrush2BOS
by Mike Swinger
AmiRequester
example
DOSHelper
Windowed help system for CLI commands, S-E-D
PETrans
translates PET ASCII files to ASCII files, S-E-D
C Squared
Graphics program from Scientific
American, Sept 86, S-E-D

orff
adds or removes carriage returns from files, S-E-D
decodes
decrypts Deluxe Paint, memo
queryWB
protection, E-D
asks Yes or No from the user returns exit code, S-E-D

visCalc
VisiCalc type spreadsheet, no mouse control, E-D
view
views text files with window and
slider
gadget, E-D
Ong, Spring, yaBoing, Zong are sprite-based
Boing! style
demos, S-E-D
CLIClock, sClock, wClock are window border clocks, S-E-D

Texts
An article on long-persistence phosphor monitors, tips on making
brushes of odd shapes in Deluxe Paint, and recommendations on
ion interfaces from Commodore-Amiga.

AMICUS Disk 15

The C programs include:
pr
a file printing utility, which can print files in the
background, and with line numbers and control
character filtering

'm'
'ask'
displays a chart of the blocks allocated on a disk.
questions an 'execute' file, returns an
error code to control the execution in that batch file
an enhanced version of AmigaDOS

'Star'
'status' command
random-dot dissolve demo displays IFF picture
slowly, dot by dot, in a random fashion.
'PopCLIZ'
invokes new CLI window at the press of a key.

The executable
programs include:
'Form'
file formatting program through the
printer driver to select, print styles
catalogs disks, maintains, sorts, merges
lists of disk files

'PSound'
SunRize Industries' sampled sound editor & recorder
makes icons for most programs
'Fractalz'
draws great fractal seascapes and mountain scapes.
3D glasses, create breakout in a new dimension
displays lists of open files,
tasks, devices and ports in use,
version of 'asteroids' for the Amiga,
high resolution graphics demo written in Modula 2.

Texts:

'anal.txt'
explains escape sequences the CON: device responds to.
'Fkey'
includes template for making paper to
sit in the tray at the top of the Amiga keyboard.
programmer's document from Commodore
Amiga, describes ways to use the Amiga's multitasking capabilities in
your own programs.

AmigaBasic programs:
'Grids'
draw sound waveforms, and hear them played.
'Light'
a version of the Tron light-cycle video game.
'MigaSol'
a game of solitaire.
'Stats'
program to calculate batting averages
'Money'
try to grab all the bags of money that you can.
of the enemy
walkers from the ice planet in Star Wars, and a picture of a cheetah.

AMICUS Disk 16
'Juggler'
demo by Eric Graham, a robot juggler bouncing
three mirrored balls, with sound effects. Twenty-four frames of HAM
animation are flipped quickly to produce this image. You control the
speed of the juggling. The author's documentation hints that this
program might someday be available as a product.

IFF pictures
parodies of the covers of Amiga World and Amazing Computing.
C programs:
'inputhandler'
example of making an input handler.
'FileZaps'
binary file editing program
'ShowPrint'
displays IFF picture, and prints it.
'Gen'
program indexes and retrieves C structures and
variables declared in the Amiga include file system.

Executable Programs:
'FixHunk2'
repairs an executable program file for expanded
memory
'ms2msus'
converts Music Studio files to IFF standard
'SMUS' format. I have heard this program might
have a few bugs, especially in regards to very
long songs, but it works in most cases.

'Missile'
Amiga version of the 'Missile Command' video game.
This disk also contains several files of scenarios for Amiga Flight
Simulator II. By putting one of these seven files on a blank disk,
and inserting it in the drive after performing a special command in this game,
a number of interesting locations are preset into the Flight Simulator
program. For example, one scenario places your plane on Alcatraz,
while another puts you in Central Park.

AMICUS Disk 17
(elcommunications disk which contains six terminal programs.
'Comm' V1.33
term prog. with Xmodem, Wxmodem,
'ATerm' V7.2
term prog. includes Super Kermit
'VT-100' V2.6
Dave Wecker's VT-100 emulator with
Xmodem, Kermit, and scripting
V4.0(20) port of the Unix C-Kermit
'Tektronix' graphics terminal emulator
based on the VT-100 prog. V2.3 and contains
latest 'arc' file compression
V0.5 for CompuServe. Includes RLE
graphics abilities & CIS-B file transfer protocol.
'FixHunk'
removes garbage characters from
modem received files
'FixCq'
filters text files from other systems
to be read by the Amiga E.C.

'AmigaHost'
graphics abilities & CIS-B file transfer protocol.
'FixHunk'
removes garbage characters from
modem received files
'FixCq'
filters text files from other systems
to be read by the Amiga E.C.

'arc'
executable version of arc V2.1
file documentation and a basic tutorial
on 'arc' files
'arcrc'
Amiga version of the popular computer
language, with example programs, E-D
Demo version of the TV-Text character generator

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PageSetter
Freely distributable versions of the updated
PagePrint and PageIFF programs for the
PageSetter desktop publishing package.
FullWindow
Resizes any CLI window using only CLI commands, E-D
Life3D
3-D version of Conway's Life program, E-D
Dedisk
CLI utility to re-assign a new
Workbench disk, S-E-D
Calendar.WKS
Lotus-compatible worksheet that makes calendars
Demo of keyboard key re-programmer, with IFF picture
to make function key labels, E-D
VPK
Video pattern generator for aligning monitors, E-D
HP-10C
Hewlett-Packard-like calculator, E-D
SetPrefs
Change the Preferences settings on the fly, in C, S-E-D

StarProbe
Program studies stellar evolution. C source included for
Amiga and MS-DOS, S-E-D
ROT
C version of Colin French's AmigaBasic ROT program
from Amazing Computing. ROT edits
and displays polygons to create three dimensional
objects. Up to 24 frames of animation can be
created and displayed, E-D
Scat
Like Ing, windows on screen run away from the mouse,
E-D

DK
Decays the CLI window into dust, in Modula 2, S-E-D
DropShadow2
Adds layered shadows to Workbench windows, E-D
AMICUS Disk 18
This disk carries several programs from Amazing Computing. The IFF
pictures on this disk include the Amiga Wake part T-
shirt logo, a sixteen-color hi-res image of Andy Griffin,
and five Amiga Live! pictures from the Amazing Stories
episode that featured the Amiga.

Solve
Gadgets
Household
Linear equation solver in assembly language, S-E-D
Bryan Catley's AmigaBasic tutorial, S-D
Bryan Catley's AmigaBasic
household inventory program, S-D
Jim Shields' Waveform Workshop: AmigaBasic, S-D
John Kennan's AmigaBasic disk
library program, S-D
Ivan Smith's AmigaBasic subscript example, S-D
C programs and executables for
Harriet Maybeck Tolly's Intuition tutorials, S-E-D
Bob Riemersma's example for
making small C programs, S-E-D
Make C look like COMAL header file, S-D
Makes Emacs function key
definitions by Greg Douglas, S-D
Snoop on system resource use, E-D
Bard's Tale character editor, E-D
CLI program shows the size of a given set of files, E-D
CLI window utility resizes current window, S-E-D

AMICUS Disk 20
Compressor, Decoder Steve Michel AmigaBasic tools, S-D
BOB and sprite editor written in C, S-E-D
SpriteMaster!
Sprite editor and animator by Brad Kiefer, E-D
Blitter chip exploration C program
by Tomas Rokicki, S-E-D
FPic
Image processing program by Bob Bush loads
and saves IFF images, changes them with
several techniques, E-D

Bankn
Complete home banking prog., balance your checkbook! E-D
AMICUS Disk 21
Target
Makes each mouse click sound like a gunshot, S-E-D
Sand
Simple game of sand that follows the mouse pointer, E-D
PropGadget
Harriet Maybeck Tolly's proportional gadget
example, S-E-D
EHB
Checks to see if you have extra hall-bright
graphics, S-E-D
Piano
Simple piano sound program
Makes cell animation scripts for Aegis Animator, in
AmigaBasic

This disk has electronic catalogs for AMICUS disks 1 to 20 and Fish
disks 1 to 80. They are viewed with the DiskCat
program, included here.

AMICUS Disk 22
Cycles
Light cycle game, E-D
Show_Print!
Views and prints IFF pictures, including larger than
screen
PrtDrvGen2.3
Latest version of a printer driver generator
Animations
VideoScope animations of planes and boing ball
Garden
Makes fractal gardenscapes
BasicSorts
Examples of binary search and insertion
sort in AmigaBasic

AMICUS Disk 23
An AMICUS disk completely dedicated to music on the Amiga. This
disk contains two music players, songs, instru-
ments, and players to bring the thrill of playing 'Big
Sound' on your Amiga
a collection of 25 instruments for playing
and creating music. The collection ranges from
Canon to Marimba
people who for people who use an
Amiga 1020 S 1/4 inch drive as an
AmigaDOS floppy. A Workbench program
that sends a DiskChange signal to the
operating system: instead of typing
'diskchange d0:' over and over again, just
click on the icon. C source included.
File makes screen 80 columns wide of text
in the Scribble! word processor.
2 programs to move the Scribble! spelling
dictionary to and from the RAM disk.
Analyzes a text file and gives the Gunning-
Fog, Flesch, and Kincaid indices which
measure readability.
Module-2 program to display memory
locations in hexadecimal.
AmigaBasic: design Tartan plaids.
Disk catalog program.
plays 8SVX sampled sounds in the
background while something else is
happening in the Amiga, as your Amiga is
booting, for example.
CLI program changes your pointer to a
given pointer.
AMICUS 25 also has a collection of mouse pointers, &
Workbench programs to display them.

AMICUS Disk 24
Sectorama
A disk sector editor for any AmigaDOS file-structured
device, recover files from a trashed hard disk. By
David Joiner of MicroIllusions
Reduces the size of IFF images, companion
program, Recolor, remaps the palette colors of one
picture to use the palette colors of another. Using
these programs and a tool to convert IFF brushes to
Workbench icons, make icons look like miniatures of
the pictures.
Module-2 program converts assembler object files to
inline CODE statements. Comes with a screen
scrolling example
Workbench task makes the same fly walk across the
screen at random intervals. Otherwise, completely
harmless.
Three examples of assembly language code from
Bryce Nesbitt:
1. SetLace.prog to switch interface on/off.
2. Why replace AmigaDOS CLI Why
3. Loadit.prog to load a file into memory until a
reboot. (Only the most esoteric hackers will find
Loadit useful.)
CLI program: resets Preferences to several colors of
monochrome & interface screens. C source is
included, works with DisplayPret, a CLI program
which displays the current Preferences settings.
A ray-traced animation of a perpetual motion being-
making machine, includes the latest version of the
Movie program, which has the ability to play sounds
along with the animation. By Ken Oker
Example of using the translator and narrator devices
to make the Amiga talk. It is written in C.
Script-driven animation and slideshow program flips
through IFF images.

AMICUS Disk 25
Nemesis
Graphics demo pans through space
towards the mythical dark twin of the sun
with wonderful music and space graphics.
The KickPlay directory holds text that describes several
patches to the Kickstart disk. For Amiga
1000 hackers who feel comfortable
patching a disk in hexadecimal, KickPlay
offers the chance to automatically do an
ADDMEM for old expansion memory, as
well as the ability to change the picture of
the 'Insert Workbench' hand. A program
is also included for restoring the correct
checksum of the Kickstart disk.

KeyBird
BASIC prog edits keymaps, adjust the
Workbench keymaps or create your own.
Modifies the Workbench so three airplanes
are used, icons can have eight colors,
instead of four. eight-color icons are
included. Public domain program 'zapicon'
or 'brush2icon' converts eight-color IFF
brushes to icons, to use Deluxe Paint to
make icons for this new Workbench.
Converts brushes to icons (bustard docs).
Graphing prog reads [x,y] values from a file
and displays them on the screen, similar to
the same-named Unix program.
Message-managing program for telecom-
munications, lets you save messages from
an online transcript to another file.
Understands the message format of the
national networks and several types of
bulletin board software. Moves through the
transcript and save messages
Speed up directory access, it creates a
small file in an indexed directory on a disk which
contains the info-mation about the files.
will also remove all the 'fastdir' files from
each directory, by CLMater's authors

The LaceWB program changes between interface and non-
interface Workbench. Previously, you
were forced to reboot after changing
Preferences to an interfaced screen. This
program flips between the normal and
extended screen heights.
A shareware utility for ProWrite users,
changes margin settings and font types.
A CLI program, print out probable causes
for Guru meditations. C source included.
Also from Software Distillery, removes
files from directories or disk drives, much
faster than 'delete'.
AmigaBasic makes snowflake designs.
Mailing list database.
Maintain softball statistics/ team records.
ShoMaid-2 program moves the files
Workbench screen around after a period of
time, prevents monitor burn-in.

AMICUS Disk 26
Idor Fay's SoundScape module code from his Amazing
Computing articles. The source to Echo,
Chord, TX, and YU is included.
The Lattice and Marx C source code is here,
along with the executable modules.
Update of prog to convert IFF images to
PostScript files for printing on laser printers
Hard disk backup prog with Lempel-Ziv
compression to reduce the necessary
number of disks.
Prints information about tasks and
processes in the system; assembler
source is included.
Left a function key act like a rapid series of
lets mouse button events.
A handy program for people who use an
Amiga 1020 S 1/4 inch drive as an
AmigaDOS floppy. A Workbench program
that sends a DiskChange signal to the
operating system: instead of typing
'diskchange d0:' over and over again, just
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The Lattice and Marx C source code is here,
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Update of prog to convert IFF images to
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compression to reduce the necessary
number of disks.
Prints information about tasks and
processes in the system; assembler
source is included.
Left a function key act like a rapid series of
lets mouse button events.
A handy program for people who use an
Amiga 1020 S 1/4 inch drive as an
AmigaDOS floppy. A Workbench program
that sends a DiskChange signal to the
operating system: instead of typing
'diskchange d0:' over and over again, just
click on the icon. C source included.
File makes screen 80 columns wide of text
in the Scribble! word processor.
2 programs to move the Scribble! spelling
dictionary to and from the RAM disk.
Analyzes a text file and gives the Gunning-
Fog, Flesch, and Kincaid indices which
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AMICUS Disk 28
Idor Fay's SoundScape module code from his Amazing
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The Fred Fish Public Domain Software Library

The Fred Fish disks are collected by Mr. Fred Fish, a good and active friend of the Amiga.

<p>Fred Fish Disk 267 Digib An Amiga device independent graphics library for fortran applications. This is an enhanced and debugged version of a public domain library, the development of which was sponsored by the US Government. This library is required for part of the MatLab package, also included on this disk. Includes source in FORTRAN. Author: Hal Brand, Craig West, James Locker</p>	<p>LaserBoing This ray-traced animation with sound is Mike's entry to the 1989 BADGE Killer Demo Contest. This "Amiga Boing" ball is just loaded with energy! Binary only. By: Mike van der Sommen</p>	<p>evaluation that automatically searches for a successful result, and string scanning that allows operations on strings to be formulated at a high conceptual level. Icon resembles SNOBOL4 in its emphasis on high-level string processing and a design philosophy that allows ease of programming and short, concise programs. This is version 7.5 of the public domain implementation of Icon from the University of Arizona. It is an update to version 6.0 from disk 61. Binary only. Author: Ralph Griswold, Clinton Jeffery, et. al.</p>	<p>Graph A program that draws mathematical functions on a plane. Text and axes may be added, and the result saved to disk or printed. Uses a full intuition interface with multiple windows (one per graph), requesters, etc. Version 1.0, includes source. Author: David Gay</p>
<p>Mackie A versatile climacore-key initiator based on POPCLI with a unique method of "screen-blanking". I won't say more, just try it! This is version 1.3, an update to version 1.2 from disk 189. Now includes automatic generation of different patterns and some bug fixes. Includes source. Author: Tomas Rokicki</p>	<p>Fred Fish Disk 272 AmigaPuntA program designed to predict the performance of horses in a race. The premise is that the factors affecting a horse's performance, and ultimately the result of the race, can be given a value. Binary only. Author: Pierre A du Parte</p>	<p>LabelPrint A program that allows you to easily print labels for your disks. This is version 3.0, an update to version 2.5 from disk 238. Shareware, binary only (source available from author). By: Andreas Krebs</p>	<p>Fred Fish Disk 281 Diff GNU diff and diff3 utilities, version 1.10. This version provides all the features of BSD's diff plus options to diff non-ASCII files, to ignore changes that just insert or delete blank lines, to specify the amount of context for context diffs, plus more. This version of GNU diff is part of the RCS package found on FF282. Includes source. By: Mike Haerel, David Hayes, Richard Stallman & Len Tower. Amiga port by Raymond Brand & Rick Schaeffer.</p>
<p>Matlab A FORTRAN package (MATrix LABoratory) developed by Argonne National Laboratories for in house use. It provides comprehensive vector and tensor operations in a package which may be programmed either through a macro language or through execution of script files. Supported functions include sin, cos, tan, arctangents, upper triangular, lower triangular, determinants, matrix multiplication, identity, hilbert matrices, eigenvalues, eigenvectors, matrix roots, matrix products, inversion, and more. Amiga specific features include workbench startup, polar plots, contour plots, enhanced plot buffer control, and algorithmic plot display generation. Includes source in FORTRAN. Author: Cleve Moler, Jim Looker</p>	<p>Fred Fish Disk 273 BattleForce A nicely done shareware game, submitted by the author, that simulates combat between two or more giant, robot-like machines. This is version 3.61, an update to version 3.01 on disk 205. Binary only. Author: Ralph Reed</p>	<p>LPE LaTeX Picture Editor is a graphical editor for producing "pictures" for the LaTeX system, which may be imported by LaTeX. You can draw boxes, dashed boxes, lines, vectors, circles, boxes with centered text, and plain text. This is version 1.1, an update to version 1.0 on disk 243, and includes some new drawing tools, enhanced user interface features, optimized code, and some bug fixes. Binary only. Author: Joerg Geissler</p>	<p>DiffDir Compares the contents of two directories, generating a list of differences to the standard output. Detects files or directories present in one hierarchy but not the other, file attributes that are different (dates, flags, comments, etc), and differences in file size. Version 1.1, an update to FF188. Includes source. Author: Mark Rinfret</p>
<p>Fred Fish Disk 268 Doctor_A This animation of Amigay on the basketball court is Marvin's entry to the 1989 BADGE Killer Demo Contest. The animation source (for Sculptor/Amiga-40) is available from the author. Author: Marvin Landis</p>	<p>PennyWise An easy to use, flexible cashbook program using an Amiga intuition interface. It can be used to keep track of the financial transactions of a cheque, bank, business, or similar account. Shareware, binary only. Author: Pierre A du Parte</p>	<p>WBAssign A small Workbench program that creates AmigaDOS assignments without having to open a CL. Assignments may be made by specifying a complete path (as supported by the CL command), or by specifying a path relative to the current directory. This allows a program and its assigns to be moved easily. In addition, WBAssign can create assigns specified in the icon files of other programs located anywhere in the system. This is version 1.20, binary only. Author: John Getach Jr.</p>	<p>FarPrint Debugging functions for programs which don't have any links to their environment. FarPrint consists of two major parts: a harbour process open to receive and distribute messages and requests, and a set of G functions to be linked into any program wishing to communicate with the FarPrint main process. Version 1.3, includes source. Author: Olaf Barthel</p>
<p>Klode This line art demo is Jerry's entry to the 1989 BADGE Killer Demo Contest, where it won 4th place. Klode uses line mode blitter code which is capable of rendering short vectors at a rate up to 15,000 lines/second. Binary only. Author: Jerry Kallaus</p>	<p>KeyBiz A general "find that file" utility which is handy for hard drives, multiple drives, and multitermed paths. Includes source. Author: Mark Schretten</p>	<p>WBRes A program that allows Workbench users to have resident programs, as in the resident capability of WShell, the ARP shell, and the WB1.3 Shell. Version 1.2b, shareware, binary only. Author: John Bickers</p>	<p>LoadImage An IFF ILM reader that accepts overscanned pictures, allows you to scroll around in the bitmap if the picture is larger than the current display, works on both PAL and NTSC machines, supports color cycling using interrupt code, and supports printing of image portions. Version 1.9, includes source. Author: Olaf Barthel</p>
<p>Fred Fish Disk 269 Calendar A program that generates calendars in any one of 10 standard formats for any year after 1900. Binary only. Author: Pierre A du Parte</p>	<p>SlideMaster A slideshow program that can show any IFF ILM picture, including HAM, extra half bright, hires, interlace, and overscan, using several different views. Also has an ARexx port and is fairly small. Version 0.1, binary only. By: Eric Calix</p>	<p>ASpice A version of the SPICE 2G.6 circuit analysis program which has been modified to run in the Amiga environment. The program arrays are adjusted to require one tenth the memory of the DEC VAX system. Although this does not usually put much of a constraint on circuit analysis, some users who are used to the full mainframe environment may have to be more aware of the memory demands of their analysis. Requires a minimum of 1 MB memory. This version neither supports nor requires the 68020 processor or 68881 coprocessor. This is Amiga version 5.1, an update to FF177. Binary only. Authors: Many, see Documentation. Amiga port by Dan Wams.</p>	<p>MRARPF Extended ARP file support package that adds an orthogonal set of routines which support generalized I/O with resource tracking while using the ARP library. Includes source. Author: Mark Rinfret</p>
<p>Fred Fish Disk 269 ChessTutor Chess tutor is a program designed to introduce novice chess players to the basics of the game. Shareware, written in AmigaBASIC. Author: William Jordan</p>	<p>Snap A tool for clipping text or graphics from the screen, using the clipboard device. Snap finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. Version 1.3, includes source. Author: Mikael Karlsson</p>	<p>Frag Two CLI utilities that show disk and file fragmentation on AmigaDOS floppies. Includes source. By: David Gay</p>	<p>MRMan A package which contains an Amiga document reading system similar to the "man" command on UNIX systems. It offers a high degree of flexibility in the naming and placement of document files on your system. This is version 1.0 and includes source. Author: Mark Rinfret</p>
<p>PropGadget Example code for using proportional gadgets, written in assembly code and C, that can be called from your own application. Includes source. Author: Jerry Trantow</p>	<p>Xoper Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last GPU code number. Clean up memory, flush unused libraries, devices, fonts, etc. and a whole bunch more! Spawns its own process. A very handy background task to have loaded. This is version 2.0, an update to FF228, and has a completely rewritten interface and an iconily feature. Assembly source included. By: Werner Gunther</p>	<p>Fred Fish Disk 279 Ash A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.0, binary only. Author: Steve Koren</p>	<p>PrintHandler A custom PRT: driver which offers easy single sheet support as well as limited data spooling. Version 1.1, includes source. Author: Olaf Barthel</p>
<p>RadBoogie This demo, which won 7th place in the 1989 BADGE Killer Demo Contest, uses almost all features of the Amiga extensively, including the copper, blitter, sprite hardware, 68000 machine language, and preemptive prioritized multitasking. Includes source. Author: Dave Quick, Mark Riley, Tomas Rokicki</p>	<p>Fred Fish Disk 275 V100Version 2.0 of the original Amiga V100 emulator with kernel and xmodem file transfer. This version adds an AREXX port, new script and AREXX commands, some bug fixes, the ability to use custom external protocol modules (not XPR), and support for zmodem. Update to version 2.8 on disk 138. Includes source. Author: Dave Wecker, Tony Sumrall, Frank Anthes, and Chuck Forsberg</p>	<p>MouseClock A clock and free memory display utility that generates a small display tied to your mouse, using two hardware sprites as the display area. Version 1.2, includes source. Author: Olaf Barthel</p>	<p>RCS The Revision Control System (RCS) manages multiple revisions of text files. RCS automates the storing, retrieval, logging, identification, and merging of revisions. RCS is useful for text that is revised frequently, for example programs, documentation, graphics, papers, form letters, etc. This is RCS version 1.2, and includes source (the source to the GNU diff program used with this distribution of RCS can be found on disk 281). Author: Walter Tichy. Amiga port by Raymond Brand.</p>
<p>ShowDisk A useful program that graphically shows the map of sectors used on floppy drives by one or more files. The mapping is color coded so you can identify what sectors are used by the various directories and files. Includes source in assembly language. Author: Bernhard Meisner</p>	<p>Fred Fish Disk 276 Bit This animation is Richard's entry to the 1989 BADGE Killer Demo Contest. An interesting feature of this animation is that it uses the Copper to show the lower right corner of the screen in Hi-Res, while leaving the rest of the screen in Lo-Res. Binary only. Author: Richard Addison</p>	<p>MRBackup A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. This is version 3.3e, an update to FF270, to fix a serious bug in that version. Binary only. By: Mark Rinfret</p>	<p>Fred Fish Disk 283 Brel A cross reference program for AmigaBASIC code. Generates a list of the BASIC code with lines sequentially numbered, plus a table showing all variables and labels used in the code, and the line numbers where they were used. Created from the CREF program on FF166, which was written by Mike Edmonds and Joel Swank. Version 1.01, includes source. Author: Dick Taylor</p>
<p>SpinPointer While going through some musty archives I found this little gem that got overlooked before. It is a short source module that provides a "busy" indicator replacement for the standard mouse pointer. Includes source. Author: Mark Rinfret</p>	<p>ClickDOS A "directory utility" type program which is reasonably small, uses a single window on the Workbench screen (which can also be iconified), does not rely on other programs for most of its functions, and is very memory efficient. This is version 1.10, binary only. Author: Gary Scott Yates</p>	<p>MRPrint A detabbing print utility that sends text files to either the printer device or the standard output. Besides expanding tabs, it will also generate page headers, line numbers, and new margins. Version 3.4, includes source. By: Mark Rinfret</p>	<p>CWDemo Demo version of a pop-up utility to control the color register assignments of intuition custom screens. V3.2, an update to FF238. Binary only. Author: Kimbersolt</p>
<p>Fred Fish Disk 270 ColumnSet A text filter program that takes as input a file with one word per line and produces a file with these words laid out in the same order in even columns, as many as will fit across the output screen or page with at least one space between columns. Includes source in Modula-2. Author: Kent Paul Dolan</p>	<p>DateRequester A module that provides intuition based support for soliciting a date value from the user. It supports both point-and-click selection of date values and direct entry of the individual components. It also includes a standalone ARexx driven date requester program which can be called from an ARexx macro file. Includes source. Author: Mark Rinfret</p>	<p>Fred Fish Disk 280 Berserker A virus detection program that can detect various forms of the common bootblock and link type viruses. Rather than checking for a specific virus, it looks for conditions that indicate a possible virus infection, thus it can detect new strains of similar viruses. Version 3.0+, includes source in assembly. Author: Ralf Thanner</p>	<p>FullReset A program to get rid of all viruses, vector modifying programs, and residents, by forcing a specific reset. Binary only. Author: Jurgen Klein</p>
<p>MRBackup A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. This is version 3.3d, an update to version 2.4 on disk 170. Binary only. Author: Mark Rinfret</p>	<p>Fred Fish Disk 277 ARTIMART (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, and vectors. Version 0.9, binary only. Author: Dietmar Jensen and F. J. Mertens</p>	<p>CM A celestial mechanics simulator with an intuition interface. You construct a layout of celestial bodies and specify various parameters for the bodies and the simulation. CM then animates the bodies according to the laws of gravitational attraction. Setups may be saved to disk to later react interesting scenarios. Version 1.0, includes source. Author: W. John Guineau</p>	<p>MarbleSlide The aim of this game is to build a slide on a 10 x 11 board of pieces that move around, allowing the marble to reach the goal piece. You play against time. Also includes a board editor so you can build custom boards. Binary only. Author: Peter Handel</p>
<p>Fred Fish Disk 271 CPUSandoff This cute "computer wars" animation is Bob's entry to the 1989 BADGE Killer Demo Contest. Lots of visual jokes in this one. Binary only. Author: Bob Janousek</p>	<p>Icon A high-level programming language with extensive facilities for processing strings and lists. Icon has several novel features, including expressions that may produce sequences of results, goal-directed</p>	<p>WatchMan A little screen hack inspired by "EyeCon" on Sun systems. Includes source. Author: Jonas Petersson</p>	<p>Fred Fish Disk 284 ARPTools A group of small utility programs requiring ARP, that have been created to address some deficiencies of the ARP CLI environment, especially to exploit the potential offered by non-named pipes in the ARP shell. Version 1.0, includes source. Author: Fabio Rossetti</p>

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Back	Two programs to assist users of Matt Dillon's Backup/Restore program in making error-free VERIFIED backups onto floppy disks. Also useful as a trackdisk device example. Includes source. Author: Stephen Vermeulen	Text2Exe	This program takes a text file, creating a runnable command which will output the text. Allows various operations to be done on the text. Binary only. Author: Oliver Wagner	DPlot	A simple display program for experimental data, with the goals of supporting paging through lots of data and providing comfortable scaling and presentation. V2.0, an update to FF237, and incorporates several significant enhancements. Binary only. Author: A. A. Walma	Version 1.3 on disk 204. Includes source. Author: Many (see README file)		
Dme	Version 1.38 of Matt's text editor. Dme is a simple WYSIWYG editor designed for programmers. It is not a WYSIWYG word processor in the traditional sense. Features include arbitrary key mapping, fast scrolling, title-line statistics multiple windows, and ability to iconify windows. Update to FF169, includes source. Author: Matt Dillon	Uedit	Version 2.5d of this nice shareware editor. Has learn mode, a command language, menu customization, hyper text, and other user configurability and customizability features. Binary only, shareware, update to FF254. Author: Rick Stiles	IPC	An IPC (Inter-Process Communication) package, with the goal of creating a standard for IPC on the Amiga that is flexible enough to handle the widest possible range of applications. The protocol used addresses different problem areas than ARexx, and emphasizes different aspects of the communication process, such as fast communication and preservation of data structure. Includes source. Author: Pete Goodeve and Peter da Silva	Uhwarp	A program which will read tracks directly from your floppy disk, compress them using adaptive Huffman encoding, and output them to a file. The resulting file can be used by lhwrap to reconstruct an image of the original disk. This is version 1.03 and includes source. Author: Jonathan Forbes	
FileTest	This routine is used to recursively descend the file system tree from a specified directory location, reading the files into memory (if they will fit) as it goes. Useful as a complete test of file system integrity. Includes source. Author: Stephen Vermeulen	Fred Fish Disk 267	DAsm	A multipass, symbolic, macro assembler for multiple target machines, including 6802, 6805, 6803, and 6811. Supports conditional assembly, addressing mode overrides, arbitrary number of named segments, pseudops for repeat loops, data generation, etc. Version 2.12, includes source. Author: Matt Dillon	KilReq	A small program which disables Intuition's AutoRequest function. In particular, this prevents AmigaDOS from putting up system requesters, which is useful if you are operating your Amiga remotely and can't use the mouse to click CANCEL. Unlike similar utilities which affect only a single CU, KilReq disables ALL requesters. This is version 1.0 and includes C source. Author: Eddy Carroll	MandelMountains	A program that renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. Version 1.1, shareware, binary only. Author: Mathias Ormann
IconTools	Here are some tools for icon tricks. Note that these tools are really hacks because they exploit some areas of the .info files that the current version of WorkBench does not clear or reset upon loading the icon. There are three programs here which allow WorkBench drawer windows to appear in non-standard colors and allow you to move the position of the file name text to anywhere in the icon's graphic. Released to the public in the hope that 1.4 will allow more flexible user customization of the WorkBench appearance. Includes source. Author: Stephen Vermeulen	FullView	A text viewer that uses gadgets at the bottom of the screen (thus can display text 80 columns wide), opens up to the full height of the Workbench screen, has fast scrolling, and can work with compressed files (file compression program included). Shareware, binary only, source available from author. V1.1, update to FF242. Author: Jonathan Potter	Xicon	Xicon lets you use icons to call up scripts containing CU commands. V2.5, an update to FF157. New features include automatic selection of the correct execution directory, the option to have keyboard interaction, and the use of IF, ELSE, etc DOS commands. Binary only. Author: Pete Goodeve	Fred Fish Disk 296	Comal	Demo of AmigaCOMAL (missing only SAVE), an incremental p-code compiler from Denmark. COMAL is a language with the design goal of combining the modern structured approach of Pascal with the ease of use and interactivity of BASIC. There are versions of COMAL for IBM, VAX, CPM, C-64, Amiga and various European operating systems. Includes a complete turtle graphics package. Is perfect for education yet powerful enough for applications programming. Version 2.0, binary only. Author: Svend Dagaard Pedersen, Freddy Dan Dalgaard Kristiansen
RecurDir	A recursive directory program that is useful as an aid in ZOOing files in nested directories. Allows one to easily ZOO the complete contents of a disk. Includes source. Author: Stephen Vermeulen	JPDitUtil	A directory-utilities type program with many built-in commands, and 16 customisable gadgets. User configurable in many ways. Can be confined to Workbench screen. This is version 1.11, binary only. Author: Jonathan Potter	Fred Fish Disk 281	GMC	A console handler with command line editing and function key support. GMC provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in the handler, and an iconify function. Version 4.0, binary only. Author: Gotz Muller	Path	A port of the very useful UNIX utility which applies context diffs to text files to automatically update them. This is a port of version 2.0.1.6 (patch level 12), which Eric has dubbed Amiga version 1.0. It is an update to an earlier version on disk 129. Includes source. Author: Larry Wall, Amiga port by Eric Green
Fred Fish Disk 265	AvailMem	MouseCoords	A small assembly utility which shows you the current position of the mouse pointer. Can be "jumped" to operate on any screen. Includes source in assembly. Author: Jonathan Potter	Keyboard	Functions to translate RAWKEY Intuition messages into usable keycodes. Includes source. Author: Fabian Dufee	Fred Fish Disk 297	Clean	A small program written in assembly code, to be used in conjunction with a cleaning disk, to clean your floppy drive heads. Version 1.0, includes source. Author: Dan Burns
DynaShow	A program and example image using a dynamic HIRes technique to display up to 4096 colors in high res with overscan. Dynamic HIRes uses a different 16 color palette on each scan line. Version 1.1, binary only. Author: NewTek	OSK	A software keyboard, which allows you to type using the mouse. Can be made to send keystrokes to any window, and can be iconified. Includes source. Author: Jonathan Potter	Sim	A simulator for register-transfer nets, which are used to describe hardware systems. This version also provides a compiler to define new devices in addition to Sim's internal devices. V4.2, an update to FF229. Binary only. Author: Gotz Muller	DevKit	A collection of C and ARexx language programs to facilitate the software development process. With DevKit, you can launch your compiler from within your editor, have the cursor positioned on your errors, look up the autodoc page for any Amiga function at a single keystroke, find a system structure within the include files, or find any function in the code you are writing. Version 1.2, includes source. Author: Peter Cherna	
'Liner	'Liner is a freely distributable outline. It can be used to create outlines of any length, in a number of different formats, and can save the outlines as straight text for export to other programs. Version 1.32. Includes source. Author: Dave Schreiber	PopDir	A small utility which "pops open" to help you look at the contents of a particular directory on demand. Version 1.6, an update to version 1.4 on disk 204. Includes source. Author: Jonathan Potter	SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, IO redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.2, an update to FF279, where it was called ash. Binary only. Author: Steve Koren	Elements	Very nice interactive display of the Periodic Table of Elements. Can display a large amount of pertinent data about a selected element along with a good deal of general and miscellaneous info. V 1.3, update to FF253. It adds a non-interface mode and extend selection of two elements. Binary only, shareware. Author: Paul Thomas Miller	
MSizer	A program that allows you to resize a window from any corner when holding down the left mouse button and the left Amiga key. Includes source. Author: Khaled Mardam-Bey	Unshar	This program extracts files from Unix shar archives. It scores over similar programs by being small and fast, handling extraction of subdirectories, and recognising a wide variety of 'sed' and 'cat' shar formats. Version 1.1, includes C source. Author: Eddy Carroll	Fred Fish Disk 292	Devstat	Assembly code example of locating and listing information about all mounted devices. Includes source. Author: Fabrizio Lienhardt	Hypno	A "bouncing polygons" type program like Mackie, LineArt, and Bezier. Includes source in C. Author: Markus Schmidt
Plasma	A plasma cloud generator program that uses the extra halfbyte mode. Plasma clouds are a special form of fractal which show very smooth color gradations. Version 1.1, includes source. Author: Roger Uzun	VirusX	Version 4.0 of a popular virus detection/vaccination program. This is an update to FF216. Includes a check for the new Xeno virus. Author: Steve Tibbett, Dan James, Jim Meyer	FileRequest	Assembly code example of a file requester. V2.0, an update to FF173, where it was called FileSelect. New features include 3 speed scrolling of filenames and ghosting of unavailable devices. Includes source. Author: Fabrice Lienhardt	Jed	A nicely done, intuition-based editor that is quite user-friendly. Features word-wrap, auto-indent, newcd, alt buffer, split-window, keyboard macro, help, printing, and more. V1.1, update to FF180. Shareware, binary only. Author: Dan Burns	
Rubik	Translation to C of a Rubik's Cube solver program originally written in Basic by John Murphy. Includes versions to do an "unwrapped" 2D solution, and a more visual 3D solution. Version 0.0, includes source. Author: Roger Uzun	ZeroVirus	A fully integrated virus checker and killer, with bootblock save and restore features. Finds both bootblock and file based viruses. Uses Brainfiles to recognise viruses, and has "on-line" Brainfile editing facilities. Can be iconified to WorkBench screen. This is version 2.01, an update to FF242. Binary only. Author: Jonathan Potter	MultiPlot	A package for making 2D plots conveniently. Tim Mooney wrote the original program, which was then enhanced by Alan Baxter with a nicer user interface, support for the PLT device, and support for file conversions. Rich Champeaux and Jim Miller wrote the PLT handler which emulates a plotter by accepting HP-GL commands, creating a raster image, then dumping it to any preferences supported graphics printer. This is version XLN and includes source to MultiPlot. Update to FF231, where it was called just "Plot". This version is 2D only. Author: Alan Baxter, Tim Mooney, Rich Champeaux, Jim Miller	SuperMenu	An information display system you can use to quickly and easily display text files (and sections of text files) with the press of a button. Version 1.62, shareware, binary only. Author: Paul Thomas Miller	
Fred Fish Disk 266	CCulls	Fred Fish Disk 268	DiskSpeed	A disk speed testing program specifically designed to give the most accurate results of the true disk performance of the disk under test. Automatically updates and maintains an ASCII database of disk results for tested disks. This is version 2.0, an update to FF251, with a few new features and a cleaner user interface. Includes source in C. Author: Michael Sinz	Writeln	Sample code that creates an icon using a compiled-in image, the source of which can be created with Icon200 on FF56. Version 1.0, includes source in C. Author: Dan Burns		
EW	Patch for Intuition OpenWindow() and CloseWindow(), creating a Mac-style frame whenever a window is opened or closed. Very short, includes source in assembler. Author: Oliver Wagner	PlotData2D	Plots data onto a custom user defined screen and window, reading the plot and screen/window definitions, along with the X and Y data pairs, from a disk file. Supports linear, log-log, and semi-log axis plots. The data can be plotted with lines, symbols, or both. Includes numerous example plots. Version 1.0, includes source in Fortran. Author: Robert C. Singletary Jr.	Fred Fish Disk 298	B8Champion	This is BootBlockChampionII, a very nicely done program that allows you to load, save, and analyze any bootblock. V3.21, an update to FF244. New features include checks for five different LAMER viruses and some other enhancements. Binary only. Author: Roger Fischlin		
FastDisk	A disk optimizer providing two ways of optimizing. Originally written by Thorsten Stolpmann. This is version II, now featuring an Intuition interface, ARP support, bug hunting, and Lattice C compatibility, done by Oliver Wagner. Includes source in C. Author: Thorsten Stolpmann and Oliver Wagner	Script	A script language that allows you to automate actions you would normally have to do manually. Script can do anything that you do manually, by either the mouse or keyboard, by using a set of commands that instruct Script to simulate specific mouse or keyboard actions. Also has an ARexx port, so it can be driven by ARexx allowing ARexx control over programs that do not have ARexx ports. Includes both a recorder to generate scripts and a player to execute them. This is version 1.20, binary only.	Fred Fish Disk 293	ClockDJ	A "Dumb Clock" utility that displays the date and time in the Workbench screen title bar. Uses only about 2 percent of the CPU time and about 10Kb of memory. Also has an alarm clock feature and audible beep for programs that call DisplayBeep. Version 1.5, includes source. Author: Olaf Barthel		
S220to8SVX	Converts sound samples from a Roland S-220S-10/MKS-100 to 8SVX IFF 8-bit samples. Version 1.0, binary only. Author: Dieter Bruns					Fenster	A program which can operate on windows owned by another program, to close them, change their size,	

	refresh gadgets, move the window to the background, etc. V2.0, an update to FF245. Includes source. Author: Roger Fischlin	
FileMaster	A file editor like NewZap or FedUp, which allows you to manipulate bytes of a file. You may also change the file size or execute a patch. Version 1.11, includes source. Author: Roger Fischlin	
Fred Fish Disk 222		
Hangman	A simple hangman program similar to one seen on some UNIX machines. Currently runs only from CLI. Includes source in C. Author: Gary Brant	DEM
Rail	An ARexx interface library that makes it easy for programs to implement a complete, robust ARexx interface with minimal effort. Version 1.0, includes source. Author: Don Meyer	
SceneGen	Demo of a program called Scene Generator, that generates very realistic looking landscapes. This program is an enhanced, low cost commercial version of the scenery program included on disk 155. This is version 2.03, binary only. Author: Brett Casebolt	Demon
Yacc	This is a port of Berkeley Yacc for the Amiga. This Yacc has been made as compatible as possible with the AT&T Yacc, and is completely public domain. Note that it is NOT the so-called Decus Yacc, which is simply a repackaging of the proprietary AT&T Yacc. Amiga version 1.0a, includes source. Author: Bob Corbett, Amiga port by Eric Green	Fixcons
Fred Fish Disk 300		
SuperEcho	A neat program to be used with Perfect Sound-like audio digitizers that generates LIVE audio effects, including Echoes, Deep Voice, Squeaky Voice, Many People, M-M-Max Headroom and much more. Binary only. Author: Kevin Kelm	IceFrac
TACL	An adventure player for games written with The Adventure Construction Language, a commercial computer language. Includes two sample games; one is text-only and the other is text-graphic. Binary only, plus the TACL source code that was used to write the graphic adventure. Author: Kevin Kelm and Rhett Rowdwell	Rocket
TitleGen	A simple script language program for generating vertically crawling title sequences in any font and up to 500 lines long. Good for video production. Version 1.6, binary only. Author: Kevin Kelm	ScreenZap
XenoZap	A program that recursively descends into directories, disabling the Xeno virus in all executable files that it finds. Version 1.0, includes source in Modula-2. Author: Kevin Kelm	SnowFall
Fred Fish Disk 301		
Aquarium	A program for searching through a special database containing information about the contents of the library, in order to find programs that match a specified list of conditions. Includes a database of disks 1-300, and a program to add the contents of future disks to the database. Binary only. Author: B. Lennart Olsson	Fred Fish Disk 302
IFLib	A ready-to-use library to perform various manipulations on IFF files. Includes a sample IFF viewer and a utility to save the front screen as an IFF file. This is version 1.6.1, an update to version 1.5.3 on disk 173, and includes a couple of bug fixes and some new features. Binary only. Author: Christian A. Weber	Circles
UeditUpdate	This is a partial update to the 2.5d version of Uedit on disk 286. It includes only the UES executable, which has had patches 1 through 4 applied. Disk 286 is still needed for a complete Uedit shareware distribution. Binary only. Author: Rick Stiles	DocSplit
Fred Fish Disk 302		
Chop	A program which uses a hotkey to chop a displayed screen down to a temporary maximum of 4 planes in 10 or 2 planes in hi-res, allowing the processor full speed access to chip memory. Only the displayed screen is affected, the program painting the screen continues to work with the full color palette. Unchopping the screen puts everything back to normal. Version 1.0, binary only. Author: Nico Francois	Gears
DiskTalk	A cute little program, like "munchio" on disk 137, which plays digitized sound samples when you insert or remove a floppy disk. Samples are saved as IFF sound files. Version 1.0, binary only. Author: Nico Francois	IRA
MiscUtils	Some small sound and screen hacks. Includes source in C. Author: Jorrit Tyberghein	Lines
PPMore	Another "more" like utility. This one reads text files that have been crunched with PowerPacker, thus saving space at the slight expense of some time to uncrunch the text. Version 1.3, binary only. Author: Nico Francois	Mean18
ProgUtils	Some miscellaneous programming utilities and examples. Includes source in assembly code. Author: Jorrit Tyberghein	Multic
QuickHelp	A utility that helps you make and display your own help files for commands. Disk space usage is minimized by using PowerPacker to crunch the help files. Version 1.2, binary only. Author: Jorrit Tyberghein	PageCnt
RollOn	A "Soko-Ban" like shareware game, submitted by the author. Includes both English and German versions, a level editor, and digitized sounds. This is version 1.1, binary only. Author: Tobias Ekerdt	Skel
Selecter	A program that helps you assemble programs on a boot disk and start them in a user friendly way. Version 2.5, binary only. Author: Nico Francois	Fred Fish Disk 305
TurboMandel	A fast mandelbrot program, written in a mix of C and assembly language. You can select between using floating point or integer calculation. Other features include a full intuition interface, cycling capabilities, extensive color control, a user definable iteration depth, fully implemented zoom, a 3-D display mode, support for extra half-bits as well as interface and hires, IFF load and save, accuracy selections, and more. Version 1.0, includes source in assembly and C. Author: Marvoet Philip	Fenster
Fred Fish Disk 303		
CPM	A program to compute mandelbrots via the Continuous Potential Method, as described in the book "The Science of Fractal Images" by H. O. Peitgen and D. Saupe. It is used to make 3-dimensional pictures of the mandelbrot set. This is a batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source. Author: Lars Clausen	Lhwarp
	A program to compute mandelbrots via the Distance Estimation Method, as described in the book "The Science of Fractal Images" by H. O. Peitgen and D. Saupe. It is used to make high resolution black-and-white images. This is a batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source. Author: Lars Clausen	Mackie
	This program implements the Demons cellular automaton as described in the August, 1989, issue of Scientific American. Using extremely simple rules it exhibits rather complex behaviour. Includes source. Author: Lars Clausen	Obsess
	A program to scan through all files in a given volume or directory, looking for project icons and changing their default tools according to instructions given in a script file. Version 1.2, includes source. Author: Lars Clausen	PrFont
	A fractal generator using the Diffusion Limited Aggregation algorithm, as described in the book "The Beauty of Fractal Images". This is version 2.1 and includes source. Author: Lars Clausen	Reversi
	Another program in the long tradition of screen hacks. This one zeroes in on your mouse pointer. Binary only. Author: Lars Clausen	
	A utility that forcibly removes screens and windows from your system. Useful to get rid of zombie screens or windows that have been left around by aborted or buggy programs. This is version 2.3 and includes source. Author: Lars Clausen	
	Another program in the long tradition of screen hacks for the Amiga. Watch the snow fall, get blown around by the wind, and collect in realistic heaps. Includes source. Author: Lars Clausen	
	A circles pattern generator, reminiscent of one of the early Amiga demos. Version 1.1, includes source in C. Author: Joel Swank	
	A program to split the 1.3 autodocs into individual subroutines. One file is created for each subroutine, with the name created by appending ".doc" to the subroutine name. Version 1.0, includes source. Author: Joel Swank	
	A program to calculate and display the gears of a multispeed bicycle. Works for bicycles with 3 to 21 gear combinations. Version 1.1, includes source. Author: Joel Swank	
	Allows easy calculation of future values of investment. Enter the beginning investment value, annual percentage rate, annual deposit amount, and number of years, to compute the future value. Version 2.0, includes source. Author: Joel Swank	
	A color line pattern generator, adapted from Mackie. Version 1.1, includes source. Author: Joel Swank	
	Two custom golf courses for Mean 18. Author: Joel Swank	
	Formats a single column of input into multiple side by side columns. Includes source. Author: Joel Swank	
	Counts and displays the number of form feeds in a file, along with the length of the longest line. Version 1.0, includes source. Author: Joel Swank	
	A skeleton workbook application that makes writing workbook programs easier. Provides routines for main, initialization and termination, gadget and menu handling, argument processing, help window, about requester, etc. Version 1.1, includes source. Author: Joel Swank	
	Prints return address labels 3-up on single-wide 3.5 inch by 7/16 inch label stock. Can print up to 5 lines per label. Version 1.1, includes source. Author: Joel Swank	
	Walks a directory hierarchy reading all files, reporting any files that can't be entirely read. Version 1.2, includes source. Author: Joel Swank	
	A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets, move the window to the background, etc. This is version 2.1, an update to version 2.0 on disk 298. Includes source. Author: Roger Fischlin	
	A program which will read tracks directly from your floppy disk, compress them using adaptive Huffman encoding, and output them to a file. The resulting file can be used by lhwarp to reconstruct an image of the original disk. This is version 1.20, an update to version 1.03 on disk 295. New features include much faster compression/decompression, a 32-bit CRC, and two additional compression methods. Binary only. Author: Jonathan Forbes	
	A versatile cli/macro-key initiator based on POPCLI with a unique method of "screen-blanking". I won't say more, just try it! This is version 1.4, an update to version 1.3 on disk 267. Includes fixes to work with latest WShell and the new "never" keyword. Includes source. Author: Tomas Rokicki	
	Obsess-O-Matic is a real-time puzzle game like Tetris where the object is to fit the falling pieces together to form complete horizontal rows. Features such as burning, exploding, and invisible pieces enhance game play. Other features such as a puzzle piece editor are included in the version available directly from the author. This is version 1.0, shareware, binary only. Author: Wayne Phillips	
	Prints a sample of each font from the fonts: directory. Draws one line of each font on a custom hires screen, which can be printed. Version 1.3, includes source. Author: Joel Swank	
	Plays the classical reversi game on an 8 x 8 square field. Version 2.0, an update to version 1.2 on disk 245. Includes source in assembly language. Author: Marc Fischlin	


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SpaceLog A database containing data for all of the man related space missions of the United States and the Soviet Union that were related to the development of manned space flight, from the beginning of the space age to the present (368 missions), listed in chronological order. Includes an AmigaBASIC program to manipulate the database. Version 1.54, binary only. Author: Gene Heitman

Fred Fish Disk 306

Life A new version of Tomas's Life game. This version includes a new bonus option, an option to perform calculations with the processor rather than the blitter, and a couple of other minor changes. This is an update to the version on disk 131, includes source. Author: Tomas Rokicki

RexxPiPlot A library of C functions useful for scientific plotting on the Amiga. The library is Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages are a few of PiPlot's features. The plots can be displayed on a monitor or sent to a graphics file for subsequent printing. This is RexxPiPlot version 0.3, an update to PiPlot version 1.00 on disk 222. New features include an ARexx interface, support for IFF output, support for PostScript output, support for Preferences, some new functions, bug fixes, and more. Includes source. Author: Tony Richardson, Samuel Paolucci, Glenn Lewis, and Tomas Rokicki

Tree A very simple directory tree traversal program, written primarily as an aid to creating zoo archives and disk backups. Has options to exclude certain directories or files with specific extensions. Includes source. Author: Tomas Rokicki

Fred Fish Disk 307

Diss/Demos Demo of Midi Sample Wrench, which provides pro sample editing features for owners of musical samplers. Version 1.1, binary only. Author: Jeff Glatt

FileIO A disk based shared library to make filename selection easy for load and save routines using an Intuition interface. This is version 1.5, and update to the version on disk 257. Now includes the ability to select multiple filenames and fixes some bugs in the 1.4 version. Binary only. Author: R. J. Maki, Jeff Glatt and Jim Fiore

Samp Documentation and interface library for an IFF FORM "SAMP", 16-bit sampled sound file format. This format allows more than one waveform per octave, and the lengths of different waveforms do not have to be factors of 2. Includes a utility to convert 8SVX files to SAMP format. Version 1.0, binary only. Author: Jeff Glatt

Fred Fish Disk 308

FFreq A general purpose file requester, which was designed to be easy to use and fast, with a built-in ARexx port allowing you to use it from ARexx scripts or applications with ARexx ports. Version 1.0, binary only. Author: Jeffrey D. Wahaus

ScreenShare A library and support programs that enable applications to open up windows on other applications' custom screens. For example, your editor may want to open a window on your terminal emulator's screen so you can compose a message while still being able to see the contents of the terminal's screen. Both applications must cooperate for the screen sharing to work. This is version 1.21, an update to version 1.2 on disk 248. Includes source for interface portions. Author: Willy Langeveld

StarBlanker A screen blanker that replaces your display with a randomly chosen animated starfield. Version 1.00, includes source in Modula-2. Author: Chris Bailey

Vlt VLT is both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC (Stanford Linear Accelerator Center). Although the VT100 part was originally based on Dave Wecker et al.'s VT100, many enhancements were made. Features include use of ARP, an ARexx port, XMODEM 1K/CRC and Kermit protocols, support for additional serial ports, external file transfer protocols (XPR), a "chat" mode, and scrollbar/review/history buffer. It comes in two versions, one with Tektronix emulation, and one without. The Tektronix emulation allows saving IFF files, PostScript files, and printing bitmaps to the printer. This is version 4.428, an update to version 4.226 on disk 257. The

major change for this update is a rewrite of the Tektronix emulation to support almost all of the Tektronix 4105 escape sequences. Binary only. Author: Willy Langeveld

Fred Fish Disk 309

Bnd A binding (glue) library builder. Takes a standard ".ld" (function definition) file and generates a binding library for the functions defined in the ".ld" file. Version 1.2, an update to the version released with midlib on disk 227. Binary only. Author: Bill Barton

Csh Version 4.00a of a csh like shell derived from Matt Dillon's shell, version 2.07. This is an update to version 3.03a on disk 223. Changes include ARP pattern matching, improved search command, some new commands like "basename", some new options, bug fixes, and an ARexx port. Includes source. Author: Matt Dillon, Steve Drew, Carlo Borro, Cesare Dieri

SKsh A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.3, an update to version 1.2 on disk 291. Binary only. Author: Steve Koren

Fred Fish Disk 310

Mon A machine code monitor/debugger program for the Amiga which is re-entrant and can be made resident. This is version 1.24, binary only. Author: Timo Rossi

UUCP An implementation of uucp for the Amiga, including mail and news. This is Matt's version 1.00 for the Amiga, based on William Lohus's Amiga UUCP 0.40 release with news code from his 0.50 release, and months of work by Matt Dillon to make fixes and add enhancements. Includes source. Author: Various, major enhancements by Matt Dillon

To Be Continued.....

In Conclusion

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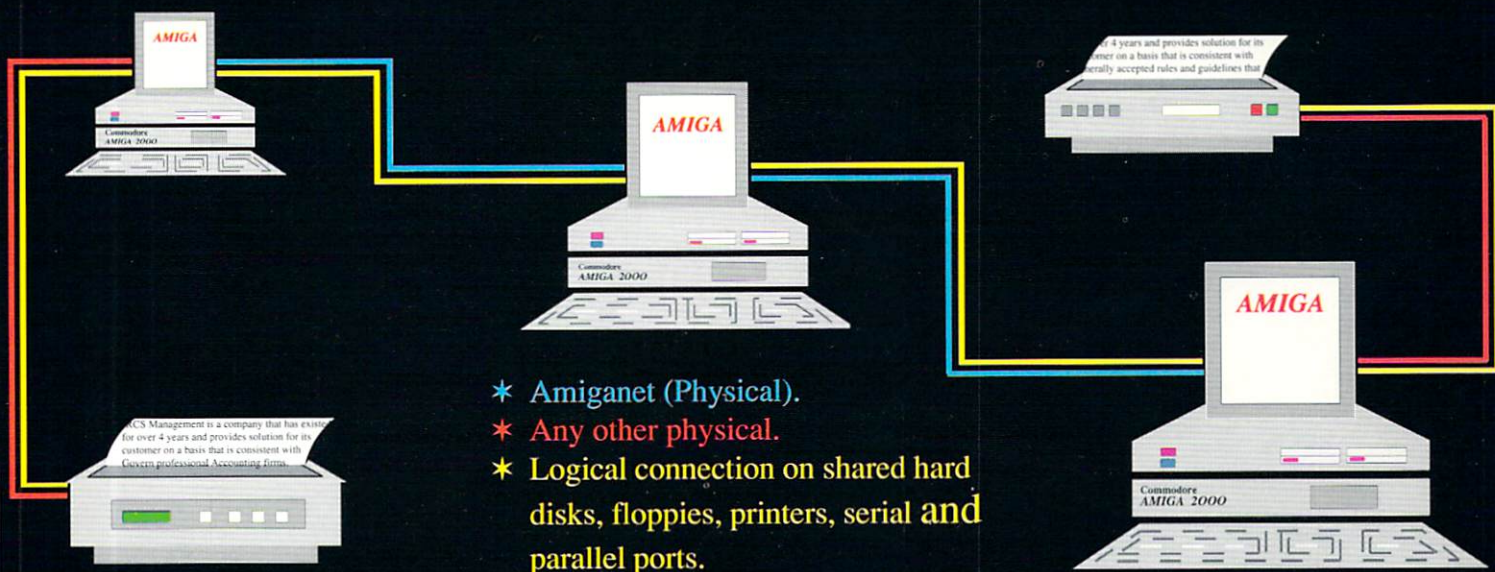
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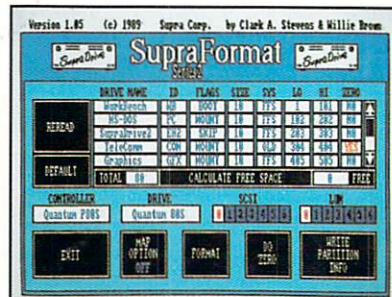
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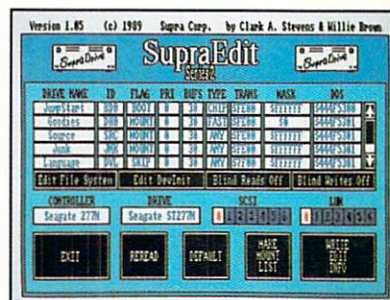
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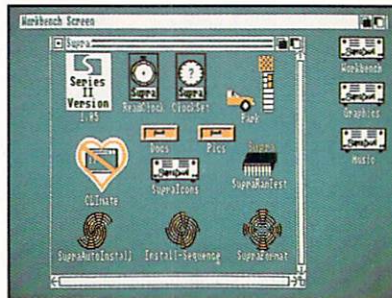
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